



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

**AUG 24 2016**

REPLY TO THE ATTENTION OF:

Mr. Joel Williamson  
J.D. Williamson Construction  
441 Geneva Avenue  
Post Office Box 113  
Tallmadge, Ohio 44278

RE: 40 Code of Federal Regulations (CFR) §761.61(c) Risk-Based Polychlorinated Biphenyl (PCB) Removal Work Plan  
Former Wilkinson Property, 1530 Commerce Drive, Stow, Ohio, 44224

Dear Mr. Williamson:

The U.S. Environmental Protection Agency has reviewed the May 2016 Work Plan, submitted on your behalf by Brownfields Restoration Group, LLC, under 40 CFR §761.61(c) for the risk-based remediation of Polychlorinated Biphenyl (PCB) at the former Wilkinson Property (the Site) in Stow, Ohio. You indicated from past subsurface investigations that the PCB impacts at the Site consist of PCB-containing low-density non-aqueous phase liquid (LNAPL) situated on top of the water table in an approximately 40 foot by 60 foot area located in the interior southeast corner of the on-site warehouse building.

The EPA has determined that your proposed PCB remediation and disposal work will not pose an unreasonable risk of injury to health or the environment as required by 40 CFR §761.61(c).

The Work Plan is hereby approved subject to the following conditions:

1. Your work plan indicates that you will be collecting characterization samples of the potentially impacted soil in surface soils (0-4 feet below grade surface (ft bgs)), intermediate depth soils (4-8 ft bgs), and soils immediately above the water table (approximately 14 ft bgs). You will also be similarly sampling the concrete floor in the impacted area.
2. You have indicated you will be excavating impacted PCB soils and concrete to a level compliant with high-occupancy usage (1 ppm PCB). Using the aforementioned characterization samples to delineate PCB impacts, you will retain soils containing less than 1 ppm PCB on-site for use as backfill material, and transport concrete containing less than 1 ppm PCB to a concrete recycling facility or construction and demolition debris landfill. Soils and concrete containing between 1 and 50 ppm PCB will be disposed of at a licensed solid waste facility in accordance with 40 CFR §761.61(a)(5)(i)(B)(2)(ii). Soils

and concrete containing 50 or greater ppm PCB will be disposed of at a TSCA-approved disposal facility in accordance with 40 CFR §761.61(a)(5)(i)(B)(2)(iii). You have also indicated that as a contingency approach, in the event soil PCB impacts are discovered at a greater extent than initially expected, you will excavate to a cleanup level of 10 ppm PCB and utilize a cap compliant with 40 CFR §761.61 (a)(7) and (8).

3. You must prepare a Cleanup Completion Report that documents how you conducted the cleanup in accordance with the applicable regulatory requirements, including those noted in the enclosure. This report is due within six (6) months after the completion of the cleanup work.
4. Should you elect to use a fence or a cap that must be maintained in perpetuity, or if any portion of the site is cleaned up to the levels appropriate for low occupancy areas, then you must notify us thirty days prior to any change in ownership of the property. Such notice must include the name, address and telephone number of the new owner, and the name of the new owner's contact person for this matter. You must also submit a notarized affidavit, signed by the potential purchaser, stating whether it intends to maintain the fence or cap, and whether it plans to maintain the low occupancy land use, or whether it intends to remove and dispose of additional PCB-contaminated soils off-site instead.
5. Additionally, if you elect to use a fence or a cap, within 60 days of completion of the cleanup, 40 C.F.R. §761.61(a)(8) requires you to record a deed notation under Ohio state law that will in perpetuity notify any potential purchaser of the property: (a) that the land has been used for PCB remediation waste disposal and that future use is restricted to low occupancy areas; (b) of the existence of the fence or cap and that the fence or cap must be maintained in perpetuity; and (c) of the applicable cleanup level left at the site, inside the fence, and/or under the cap. The owner of the site must also submit a certification to the Region 5 Regional Administrator that they have recorded a deed notation with regard to the Site in the Summit County, Ohio land records.

EPA's Office of Solid Waste and Emergency Response (OSWER) policy requires that all cleanups protect human health and the environment which extends to the environmental footprint of the cleanup action. Accordingly, EPA urges you to conduct this work consistent with the American Society for Testing and Materials (ASTM) Standard Guide E2893 for Greener Cleanups for Best Management Practices (BMP). Please review the guide and implement any practices that are feasible. If you incorporate any Greener Cleanup BMPs identified in the ASTM E2893 Standard, the Cleanup Completion Report should include a section on BMP documentation, as described in ASTM E2893 Section 6.6.5.

This Approval does not constitute a determination by EPA that the transporters or disposal facilities selected by you are authorized to conduct the activities set forth in the Work Plan and Addendum. You are responsible for ensuring that your selected transporters and disposal facilities are authorized to conduct these activities in accordance with all applicable federal, state, and local statutes and regulations. This letter does not relieve you from compliance with any other federal,

state or local regulation and does not preclude EPA from initiating any enforcement action, including an action seeking civil penalties for any violation of federal regulations.

In addition, if you wish to make any changes to your notification (including changes in the project schedule), then you must submit your proposal to Zachary Sasnow, of my staff, in writing no less than 14 calendar days prior to the proposed implementation of the change. If you have any questions, please contact me or Zachary Sasnow at (312) 886-0258 or [sasnow.zachary@epa.gov](mailto:sasnow.zachary@epa.gov).

Sincerely,



Margaret M. Guerriero  
Director  
Land and Chemicals Division





# **PCB REMEDIATION WORK PLAN**

**Former Wilkinson Property  
1530 Commerce Drive  
Stow, Ohio 44224**

**May 2016**

## **Background**

The subject site is located at 1530 Commerce Drive in Stow, Ohio (see Figure 1) and is approximately 12.66 acres in size. The property is listed with the Summit County Auditor's Office as parcel number 5600155 and zoned as manufacturing and medium assembly. The site property is located in an area dominated by commercial and industrial properties, with some residential development to the southwest. The subject property contains one building with approximately 159,000 square feet of interior floor space. The building is mostly a single-story, slab-on-grade structure, with a section of two-story office space on the front (north) end nearest the road (Commerce Drive). The original building was constructed in 1961 with several subsequent additions.

The eastern half of the building was recently used by Jaco Fridge Recycling, although this operation vacated the building in the spring of 2015. The western half of the building (including the target area of this work plan) is currently used by Struktol for the warehousing of raw materials and finished products that are manufactured elsewhere. The environmental issues associated with the petroleum and PCB contamination in the target area of the site predate Struktol's occupancy of the Property. No information from previous environmental investigations revealed evidence of any former operations that stored or used PCBs in this portion of the site or that would otherwise indicate a likely source of the PCB contamination found.

## **Toxic Substance Control Act (TSCA) Requirements**

Petroleum product has historically been found in a discrete and limited portion of the subsurface of this site. This petroleum product is in contact with the ground water table and has been

measured as a floating layer on the surface of the groundwater in the target area. The discovery of PCB concentrations in excess of 50 parts per million (ppm) in this floating petroleum product has prompted the need for this PCB Remediation Plan and its submittal to the USEPA for review and approval prior to initiating cleanup activities. Under 40 CFR 761.61(a), a *self-implementing on-site cleanup and disposal of PCB remediation waste* is not permitted if ground water has been impacted. Therefore, this work plan has been prepared in accordance with the *risk-based disposal approval* process as stipulated under 40 CFR 761.61(c). A request for work plan approval under this process must include a description of the nature of the contamination, a summary of the assessment and characterization, the location and extent, and the cleanup plan intended to be implemented to achieve compliance with the applicable and appropriate standards. The standards stated in this plan will be adhered to unless modified in accordance with the requirements of 40 CFR 761.61(c) and approved by TSCA representatives of the USEPA.

### **Site Assessment and Characterization**

The site has been the subject of several environmental investigations related to the petroleum, and later PCBs, found to have impacted the subsurface in a specific portion of the facility. Refer to Tables 1 through 3 and Figures 3 through 5 for analytical summary tables and maps related to the PCB concentrations found in the soil, ground water, and petroleum free product in the target area of the site. These investigations and associated findings are described in the following summaries.

- A Phase I Environmental Assessment was prepared by Environmental Mitigation Group (EMG) in July of 1996 for the entire property. This assessment noted oil stained walls, floors and oil stained sorbent material in the area that is the subject of this PCB Remediation Work Plan, the interior southeast corner of the building. Stained soil was also observed outside the building adjacent to this area.
- In May of 1998, EMG completed a Phase II Environmental Site Assessment and Remediation Report. According to this report, several direct push (Geoprobe®) borings were advanced outside along the southern edge of the southwestern corner of the building. Samples from these borings exhibited elevated levels of Total Petroleum Hydrocarbons (TPH). No samples were taken inside the building and the subsequent

remediation was limited to the exterior of the southwest corner of the building. PCBs were not identified as part of this assessment or remediation of petroleum.

- On December 22, 2004, Brownfield Restoration Group, LLC (BRG) personnel sampled ground water from the existing monitoring wells at the site. Results of this ground water sampling event indicated that all levels of VOCs and SVOCs were below laboratory detection limits. However, during this sampling event, a thick layer of light brown, viscous oil was discovered in MW-4 (now the location of 'Recovery Well w/Belt Skimmer').
- On January 11, 2005, a total of 18 Geoprobe borings were performed by BRG on the property to determine the horizontal extent, if any, of the oil discovered in MW-4 during the December 2004 sampling event. There was no visual evidence of oil product in any of the direct push soil borings at any interval. Two of the boring samples produced a slight petroleum odor at depths of 2.5 to 4 feet. Based on this investigation, the area of free product appeared to be limited to the immediate vicinity of MW-4.
- On September 16, 2006, the area immediately surrounding MW-4 was excavated under the direction of BRG. A 5ft. x 5ft. pit centered on MW-4 was excavated to 12.75 feet below the existing floor of the building. An area 25 feet x 13.5 feet was excavated to a depth of 2.5 feet around the deeper pit to determine if a pool or source of oil existed in the sub-base material beneath the concrete floor in this area. No oil was encountered. The monitoring well (MW-4) was removed during the excavation. Samples were taken from the four walls and floor of the excavation. Approximately 24 hours after the excavation was completed, oil product had seeped up through the floor of the excavation pit. A Recovery Well was placed in the deeper portion of the excavation in the location that MW-4 was previously positioned. The excavation was then backfilled. It was recommended that addressing the petroleum product on the ground water should be the focus of remedial efforts and that this could be accomplished using a belt skimmer as a cost effective and reliable technology for removing the product from the water table.
- A Phase I Environmental Assessment report of the subject property was prepared by Bureau Veritas (BV) on January 23, 2012. The report identified two Recognized Environmental Conditions (RECs), which consisted of the free product encountered on the ground water in the previous location of monitoring well MW-4 and an historic oil release near the south side of the facility where previous assessment/remediation focused only on total petroleum hydrocarbons (TPH). BV subsequently performed a Phase II environmental investigation to address the REC characterized by the historic oil release

near the south side of the facility and determined that this area was satisfactorily mitigated.

- In February 2012, a belt skimmer was installed in the recovery well (former MW-4 location). This belt skimmer has been operated intermittently since its installation. The oil from this recovery well has been tested for PCBs on a few occasions since the belt skimmer began operation (see Table 3) and the highest concentration detected was 28 parts per million (ppm).
- On April 24 and 25, 2012 BRG conducted further free product investigation in the vicinity of the Recovery Well w/Belt Skimmer (former location of MW-4) consisting of the installation of four soil borings, subsequently converted to monitoring wells, identified as B/MW-118 through B/MW-121. These borings/monitoring wells were installed approximately 20 feet away from the recovery well/belt skimmer to surround and delineate the known free product source area and determine the horizontal extent of the free product. Free product was not detected in any of the four newly installed monitoring wells. Ground water analytical results indicated no detectable concentrations of PCBs. Soil analytical results indicated concentrations of TPH (C20-C34) at boring locations B-118, B-120, and B-121 ranging between 3,400 and 6,400 mg/kg and PCB concentrations of 0.46 mg/kg at soil boring B-118. The TPH concentrations were identified in soil horizons approximately 4 to 8 feet below grade and the low level concentration of PCBs was detected in soil located at approximately 6 to 8 feet below grade. Concentrations of PCBs were not detected above laboratory detection limits in soil samples submitted for analysis from soil borings B-119 through B-121, and gasoline- and diesel-range TPH organics (i.e., C6-C20) were not detected above laboratory detection limits in any of the samples submitted for analysis.
- Results of the work performed during this investigation demonstrated that the newly installed monitoring wells were not currently impacted by free product, suggesting that the free product known to exist at the site was limited to the immediate vicinity of the existing oil recovery well. Based on the soil and ground water analytical results obtained, it appears that the PCBs previously identified to be present in the free product had no significant effect on soil and ground water in close proximity to the oil source area at that time.
- On April 10, 2015, Renew Environmental (Renew) completed another Phase I assessment of the subject property. This Phase I concluded that the free product known

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to exist in the subsurface in the vicinity of the 'Recovery Well w/Belt Skimmer' constituted the only Recognized Environmental Condition (REC) at the site.

- In April of 2015, Renew also conducted additional subsurface investigation in the vicinity of the 'Recovery Well w/Belt Skimmer.' This investigation included the installation of six soil borings (B-122 through B-127). Four of these borings were converted to ground water monitoring wells (MW-122, MW-123, MW-126, and MW-127). This investigation also included the sampling of two existing wells on the exterior of the building in the general vicinity of the target area of interest. Renew designated these two ground water monitoring wells MW-128 and MW-129. PCBs were analyzed in three of the seven soil samples submitted to the laboratory and PCBs were not detected in any of these three soil samples. The six ground water samples analyzed for PCBs during this investigation also did not detect any PCB concentrations. TPH was only detected in one of the soil samples (B-125) at a depth of 0 to 2 feet. Also during this investigation, free product was discovered in MW-118, which previously had not contained product, as well as in the 'Recovery Well w/Belt Skimmer.' The product in MW-118 was sampled and analyzed for PCBs and was found to contain 53 ppm.
- BRG conducted free product sampling of 'Recovery Well w/Belt Skimmer' and MW-118 on May 28, 2015. The results indicate that the PCB concentration of the oil in the Recovery Well (15 ppm) remains below the TSCA threshold of 50 ppm and the PCB concentration in MW-118 (63 ppm) was confirmed to exceed the TSCA reporting limit.
- A geophysical survey was conducted on June 23, 2015 to investigate if a previously unknown tank or piping system may be located in the subsurface of the impacted area and contributing to the release of free product. The results of this investigation did not identify the presence of any underground structures or features that might be contributing to the oil contamination.
- On February 18, 2016 a Dual Phase Extraction (DPE) pilot test was conducted using a vac-truck capable of producing high vacuum pressures. The results indicated that the test was able to generate a large radius of influence with a strong vacuum response at the eight surrounding observation wells (MW-118 thru MW-122, MW-126, and MW-127). During the 4.25 hour test, 50 gallons of water and no measurable amount of oil was recovered. The results suggest that either there is little oil left in the subsurface to recover or that the oil is highly viscous and is adhering to the soil particles. It was recommended that injection of a surfactant into the surrounding observation wells would likely enhance the mobility of any remaining oil in the immediate area and allow it to be more readily collected in the recovery well/sump.

- As of March 21, 2016 the belt skimmer collected 16.91 gallons of oil from the ‘Recovery Well w/Belt Skimmer’ and MW-118 since its installation in February of 2012.

Ground water affected by floating oil product contaminated with PCBs has been determined to be limited to the area of the Property in the immediate vicinity of the location of ‘Recovery Well w/Belt Skimmer’ and MW-118. This delineation of the presence of PCB oil contamination is supported by findings from numerous surrounding ground water monitoring wells which have been demonstrated not to contain any free product or dissolved PCBs in the ground water. The exact cause, amount of oil released, and the original point source of the PCB-contaminated oil product is unknown. PCB-contaminated oil product floating on the surface of shallow ground water below the targeted portion of the site is proposed to be actively removed to the extent practical, as described in this work plan.

### **PCB Cleanup Standard**

The Ohio EPA Voluntary Action Program (VAP) provides extensive standards for a wide variety of chemicals released to environmental media, including PCBs. Although this project is not being formally conducted under the VAP, the VAP standards are useful and are adopted herein, as appropriate, in conjunction with the TSCA standards, for the purpose of this PCB remedial action. However, in the event of a conflict, the TSCA standards will prevail.

VAP and TSCA standards are dependent upon the future intended land use. At this site, the Property has long been used for commercial/industrial purposes and will be restricted to this purpose for future land use. Current use (i.e., warehousing) of the targeted portion of the site comports with the TSCA criteria for designation as a ‘low occupancy area’. However, the property owner would like to retain the option of using the property in conformance with the criteria for a ‘high occupancy area’. This would indicate that a soil cleanup standard of less than or equal to 1ppm [40 CFR 761.61(a)(4) (i)(A)] would be appropriate for this site. In the unexpected event that soil PCB contamination exceeding 1 ppm is found and is more widespread than anticipated based on current data, we may elect to also designate the concrete floor (six-inch minimum thickness) as an engineering control in order to increase the soil cleanup



standard to less than or equal to 10 ppm. If the new concrete floor is designated as an engineering control, the concrete cap shall meet the technical specifications in 40 CFR 761.61(a)(7) through (8).

The VAP standard for direct contact with PCB-contaminated soil is the commercial/industrial standard of 20 parts per million (ppm). This VAP commercial/industrial standard for direct contact with soil also stipulates a point of compliance (upper two feet of soil) meaning that below two feet the PCB concentration could exceed 20 ppm; however, TSCA does not recognize a 'point of compliance'. The VAP would also permit the use of an engineering control (such as the concrete floor in the target cleanup area) to eliminate the direct contact exposure pathway and therefore allow a concentration of PCBs greater than 20 ppm to remain in the subsurface.

The soil standard for this PCB clean-up will be 1 ppm at all soil depths, which will comply with both TSCA and VAP standards, with an option to increase the standard to 10 ppm if the concrete floor is designated as a cap. At this site, the highest total PCB concentration identified in the soil was 0.46 ppm (see Figure 3 and Table 1); therefore, soil remedial actions related to the PCB contamination are not anticipated.

Ground water sampling and analysis indicate that the PCBs have not dissolved into the ground water (see Figure 4 and Table 2), which is likely due to the extremely low solubility of PCBs in water and the affinity of PCBs for the petroleum product containing them. Concentrations of PCBs above laboratory method limits were not detected in ground water below the Property, which demonstrates that ground water has not been adversely impacted by the PCBs. However, a sample of the oil product found floating on the water table obtained from an affected monitoring well (MW-118) yielded a total PCB concentration of 63 ppm (see Figure 5 and Table 3). The free floating petroleum product must be remedied and is the subject of this PCB remediation Work Plan. The ground water standard for PCBs at this site will be the Unrestricted Potable Use Standard (UPUS) of 0.5 ppb dissolved in the ground water and no measurable thickness of free petroleum/PCB product on the ground water surface.

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## Planned Remedial Actions

The following remedial actions will be implemented at this site in order to ensure compliance with the PCB clean-up standard as set forth in this plan:

### Pre-Excavation Soil Characterization

- Prior to excavation, the soil will be pre-characterized in-situ for waste disposal purposes.
- Soil borings (each extended to a depth of 16 ft.) will be advanced on a 10-foot grid spacing within the area targeted for excavation. Refer to Figure 6 for a layout of the pre-excavation characterization borings.
- Soil samples will be obtained from the following depth intervals – 0-4 ft., 4-8 ft., 8-12 ft., and immediately above the ground water table (approximately 14 ft.). The sample retained for laboratory analysis from each sample interval will be biased toward that portion of the soil column representing the ‘worst case’ for potential PCB contamination (e.g., oil staining or odor).
- Quality Control (QC) samples will also be obtained during the collection of the pre-excavation soil characterization. This sampling will include one duplicate per 10 samples obtained and analysis of one matrix spike/matrix spike duplicate (MS/MSD) per every 20 samples. In addition, one field rinsate blank from the Geoprobe<sup>®</sup> rig used to obtain the soil samples will be obtained and analyzed at a rate of one per day during sampling activities. Rinsate blanks will be obtained by pouring laboratory-provided blank water through the sample core tube of the Geoprobe<sup>®</sup> tooling after the tooling has been decontaminated.

### Excavation and Removal

- The area of the site known to be impacted by free product (the ‘Target Area’) will be excavated. Refer to Figure 7 for a general layout of the proposed excavation and Figure 8 for excavation details.

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- Any stained portions of the concrete floor in the Target Area will be wipe-sampled in accordance with 40 CFR 761.265 to characterize the concrete with respect to potential PCB contamination. The concrete will then be saw-cut, broken, and removed. PCB-contaminated concrete will be placed with PCB-contaminated soil for subsequent off-site transportation and disposal at a TSCA approved facility. Non-contaminated concrete will be loaded and transported off-site to a construction & demolition debris (C&DD) landfill or a concrete recycling facility.
  - The soil will be excavated to a depth of approximately one foot below the ground water table (approximately 14 to 15 feet below surface grade. The excavation sidewalls will be sloped at an approximate 1:1 to 2:1 ratio depending on the final extent of excavation (see Figure 7).
  - During excavation, soil will be segregated in accordance with the results of the pre-excavation characterization sampling described above. Any soil with PCB concentrations of less than 1 ppm will be stockpiled on pavement and under tarp at the site for future use as backfill for the excavation.
  - Soil from any grid space and depth interval exhibiting PCB concentrations greater than 1 ppm but less than 50 ppm will be segregated in a plastic-lined roll-off container. These soils will be removed from the site for disposal at a properly licensed solid waste facility.
  - Soil from any grid space and depth interval exhibiting PCB concentrations of 50 ppm or greater will be segregated in a separate plastic-lined roll-off container. These soils exhibiting concentrations of PCBs greater than 50 ppm will be removed from the site and disposed of at a TSCA-approved facility properly licensed and permitted to receive such waste.
  - Upon completion of excavation in the area determined to be impacted by PCBs based on pre-excavation data, the sidewalls and floor of the excavation will be composite-sampled for PCB analysis to confirm that the established cleanup standards are met. Quality control (QC) testing, to include one duplicate per 10 samples obtained and one matrix spike/matrix spike duplicate (MS/MSD) per every 20 samples, will also be performed.
  - If confirmation sampling indicates that PCB-contaminated soil above the cleanup standard remains within the limits of the initial excavation at 1:1 sloped walls, then the excavation will be expanded in the direction of the contaminated soil. This excavation expansion will continue until the point at which the excavation wall reaches a slope of approximately 2:1 (see Figure 7). The excavation walls

will not exceed a 2:1 slope ratio due to concerns regarding excavation wall stability. If additional excavation is conducted, subsequent confirmation sampling will be conducted as described above.

- Upon completion of the excavation, any accumulated floating oil will be vacuumed off of the ground water table using a vac-truck. Any water/oil removed from the site via vac-truck will be analyzed, as necessary, and properly disposed at an off-site facility licensed to accept fluids of this nature.
- The excavation will remain open for a period of time (30 to 90 days) to permit oil to re-infiltrate the excavation. On a frequency that will depend on the rate of oil recharge into the excavation, a vac-truck will be used to collect and dispose of accumulated oil, as described above.
- The excavation will be backfilled after 30 days if oil no longer accumulates in the excavation. If oil continues to collect after 30 days, the excavation will remain open to collect oil for up to 90 days prior to backfilling.
- During backfilling, the excavation bottom will be filled with #57 limestone gravel to a depth of 10 feet below surface grade. The stockpiled clean soil will be used to backfill the excavation to the level of the surrounding concrete floor sub-base. The soil backfill will be placed in one foot lifts and compacted with an excavator-mounted 'hoe pac' type of compactor.
- A recovery sump constructed of 8-inch diameter PVC with 3 feet of screen will be installed in the excavation during backfilling (refer to Figure 6).
- The sub-base and concrete floor will then be re-installed. The concrete thickness will be the same as the surrounding existing floor (assumed 6-inches) and will be reinforced with wire mesh. The new concrete floor will be saw cut, as appropriate, to provide for contraction joints. If the new concrete floor is designated as an engineering control in order to increase the allowable residual PCB concentration from <1 ppm to <10 ppm, the concrete cap shall meet the technical specifications in 40 CFR 761.61(a)(7) through (8).
- It is anticipated that the excavation and subsequent vacuuming events will have mitigated the oil, in which case the new recovery sump will serve as a monitoring well rather than as an oil recovery point. However, in the event that the oil continues to accumulate, the recovery sump will provide access to remove the oil via a belt skimmer. Surfactants may also be injected into the surrounding observation wells to enhance the oil recovery if the presence of oil persists.

#### Continued Oil Removal Via Belt Skimmers (As Needed)

- The existing belt skimmer at the site will be re-installed into the new 8-inch recovery sump. The belt skimmer operating times will be adjusted to optimize the collection of oil from the ground water table. The collected oil will be stored in a 55-gallon drum on the site and will be periodically removed from the site by a properly licensed waste hauler. The waste will be transported to a TSCA-approved facility licensed to accept and dispose of liquid waste of this nature.
- Operation of the belt skimmer and monitoring of the surrounding monitoring wells will continue until oil product is no longer recovered and monitoring results indicate that the area is free of PCB-contaminated product on the ground water table.

#### Land Use Restrictions

- Future land use will be restricted via an institutional control (i.e., activity and use limitation recorded with the Property deed) to commercial/industrial use only.
- Use of ground water on the Property will also be prohibited via an institutional control.

#### Post Remediation Monitoring

- A minimum of four quarters of monitoring after completion of oil recovery efforts to confirm remediation of the target area will be performed. Monitoring will consist of gauging monitoring wells MW-119, MW-120, MW-121, MW-122, MW-123, MW-126, MW-127, MW-128, and the new Recovery Sump using an interface probe which will detect the presence of free product oil.
- Post remediation confirmation monitoring will be considered complete when four consecutive quarters of monitoring detects no recoverable free product oil layer in any of the monitoring wells or the recovery sump.

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## **Remediation Roles and Responsibilities**

Although this project is not being formally conducted under the Ohio EPA Voluntary Action Program, remediation activities will be performed under the direction of a VAP Certified Professional provided by the Environmental Consultant. Responsibilities for elements of the project work will be divided between the Environmental Consultant and the Remediation Contractor as described below:

Environmental Consultant – Brownfield Restoration Group, LLC (BRG) is the Environmental Consultant for this project. The Environmental Consultant will provide Certified Professional supervision and an environmental geologist to observe and document on-site remedial activities with respect to technical project objectives. The following specific tasks will be performed by the Environmental Consultant:

- Delineate the target area to be excavated.
- Conduct pre-excavation soil characterization sampling.
- Direct the segregation of ‘clean’ versus ‘impacted’ soil.
- Obtain sidewall and excavation floor soil samples and ground water samples for analytical testing to confirm residual levels of contaminants and verify compliance with applicable standards.
- Prepare a Remedial Action Completion Report documenting the execution of this Work Plan for submittal to TSCA.
- Perform monitoring after completion of oil recovery efforts to confirm remediation of the target area.
- Prepare a Monitoring Close-out Report after completion of monitoring activities as described in this work plan.

Remediation Contractor – The Remediation Contractor will be responsible for supplying all equipment, labor and material to complete the scope of work described herein. In general, the Remediation Contractor’s scope of work will include the excavation, transportation, and disposal of contaminated soil and the removal, transportation, and disposal of free product from the oil recovery excavation and sumps at the direction of the Environmental Consultant. The Remediation Contractor will be responsible for providing all labor, material, equipment, and any permits that may be required to perform the following specific tasks:



- Prepare and implement a site-specific Health & Safety Plan. The Remediation Contractor will be responsible for the health and safety of its workers and for securing the work site with respect to health and safety matters (e.g., providing a security fence/barrier and warnings signs around all open excavations) as well as providing adequate ventilation during remedial actions, as may be necessary.
- Secure and maintain any necessary permits for conducting the remedial actions, including (as may be required) water discharge, transportation of wastes, and waste disposal.
- Excavate the oil recovery target area in accordance with this work plan and as directed by the Environmental Consultant.
- Load, transport, and dispose of any soil excavated that is determined to exceed standards established in this plan. Such soil must be disposed of at a facility licensed and permitted to accept soil of this nature.
- Backfill the excavation with gravel and clean stockpiled soil and install oil recovery sumps in accordance with this plan.
- As may be needed, install the belt skimmer into the oil recovery sump to remove free product as directed by the Environmental Consultant.
- Optimize the run time and operate and maintain the belt skimmer.
- Transport and dispose of collected product fluids at a facility licensed and permitted to accept PCB-contaminated petroleum products.
- Provide manifests and weigh tickets for each load of excavated material and/or product fluids removed from the site.

Although the Remediation Contractor and the Environmental Consultant will coordinate activities, the Environmental Consultant will ultimately be responsible for verifying and demonstrating that the appropriate standards have been met and that the objectives of this work plan have been satisfactorily achieved.

### **PCB-Contaminated Soil Disposal**

If soil excavated from the oil recovery target area is found to exceed the standards established in this work plan, the contaminated soil will be transported to a disposal facility properly licensed to accept waste of this nature. Non-hazardous soil containing petroleum compounds and/or PCBs greater than 1 ppm but less than 50 ppm will be disposed of at Countywide Landfill, located in East Sparta, Ohio, or American Landfill, located in Waynesburg, Ohio, or other properly licensed solid waste disposal facility. Soils containing PCB concentrations in excess of 50 ppm (if any) will be transported and disposed of at EQ-Wayne Disposal, located in Belleville,

Michigan. The Remediation Contractor will provide a complete waste manifest for each load of contaminated soil removed from the site.

### **PCB-Contaminated Fluid Disposal (Oil and Ground Water)**

Fluids (oil, water, PCBs) removed from the oil recovery excavation or sumps will be transported to a disposal facility properly licensed to accept the waste. Removed PCB oil and any ground water containing PCB concentrations in excess of 50 ppm will be transported and disposed of at Clean Harbors in Deer Park, Texas. The Remediation Contractor will provide a complete waste manifest for each load of contaminated fluids removed from the site.

### **Contact Information**

For additional information or questions regarding the technical aspects of this project, please contact the Environmental Consultant at the following address:

Mr. Jim Smith  
Brownfield Restoration Group, LLC  
1000 South Cleveland-Massillon Road  
Akron, Ohio 44333  
Phone: (330) 668-4600 ext. 101  
Fax: (330) 668-8464  
Email: [jimsmith@brgroupllc.com](mailto:jimsmith@brgroupllc.com)

The Remediation Contractor that will be implementing the soil remediation and free product collection/disposal operations is also the current owner of the Property and can be contacted at the following address:

Mr. Joel Williamson  
J.D. Williamson Construction  
441 Geneva Ave.  
PO Box 113  
Tallmadge, Ohio 44278  
Email: [JoelW@jdwilliamsonconstruction.com](mailto:JoelW@jdwilliamsonconstruction.com)

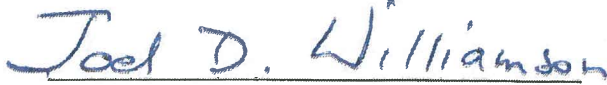
Because the Remediation Contractor and the Property owner are the same entity on this project, an access agreement is not necessary to conduct the work outlined in this plan.

**Certification Statement [40 CFR 761.61(a)(3)(i)(E)]**

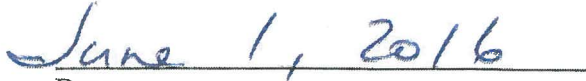
Mr. Joel Williamson, as the property owner and party responsible for the remediation activities, certifies that all sampling plans, sample collection procedures, sample preparation procedures, extraction procedures and instrument/chemical analysis procedures used to assess or characterize the PCB contamination at the Former Wilkinson Property located at 1530 Commerce Drive, Stow, Ohio 44224 will be maintained on file in the offices of J.D. Williamson Construction located at 441 Geneva Ave., PO Box 113, Tallmadge, Ohio 44278 and will be made available to all Federal, State, or Local Environmental Regulatory Agencies as required by law.



Signature of Authorized Representative



Printed Name of Authorized Representative



Date

**Attachments:**

Attachment A: Figures

Attachment B: Tables

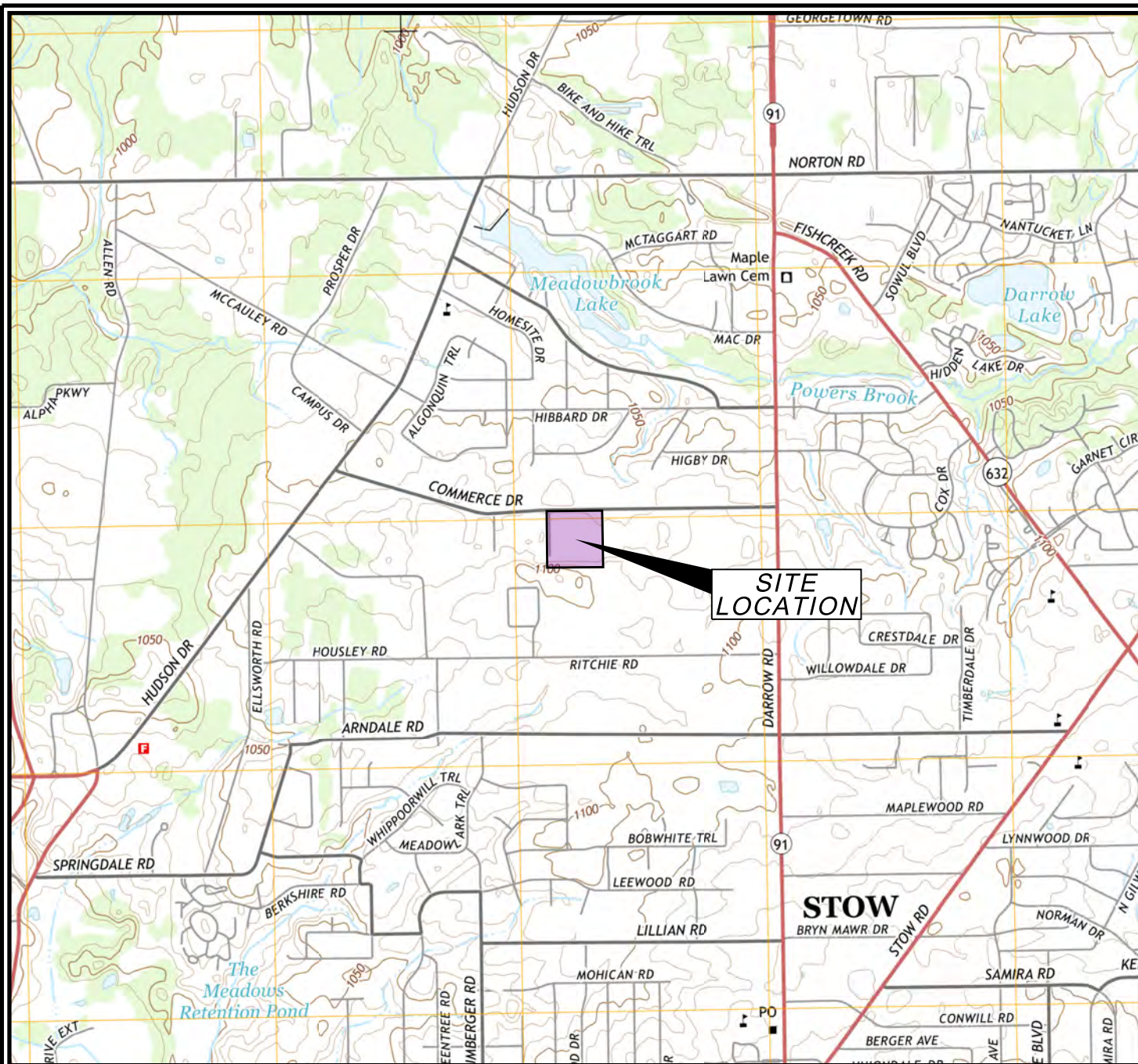
Attachment C: Boring Logs/Well Construction Diagrams

Attachment D: Laboratory Analytical Reports, Chain-of-Custody Forms and Affidavits

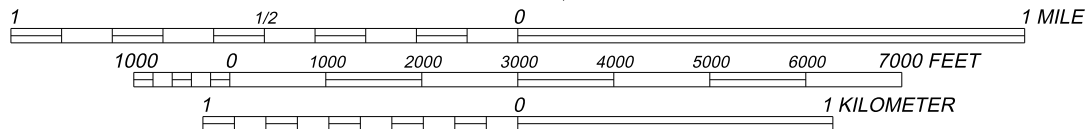
Attachment E: Standard Operation Procedures (SOPs)



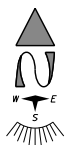
**ATTACHMENT A**  
Figures



SCALE 1:24,000



CONTOUR INTERVAL 10 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1988



GEOGRAPHIC COORDINATE-  
LATITUDE: N. 41° 11' 22.92"  
LONGITUDE: W. 81° 27' 00.80"  
HORIZONTAL DATUM: NAD83

USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)  
QUADRANGLE:

HUDSON, OHIO 2013



QUADRANGLE  
LOCATION



1000 S. Cleveland-Massillon Rd.  
Suite 106  
Akron, OH 44333  
Phone: (330) 668-4600  
Fax (330) 668-8464

## Figure 1 - Site Location on U.S.G.S. Topographic Map

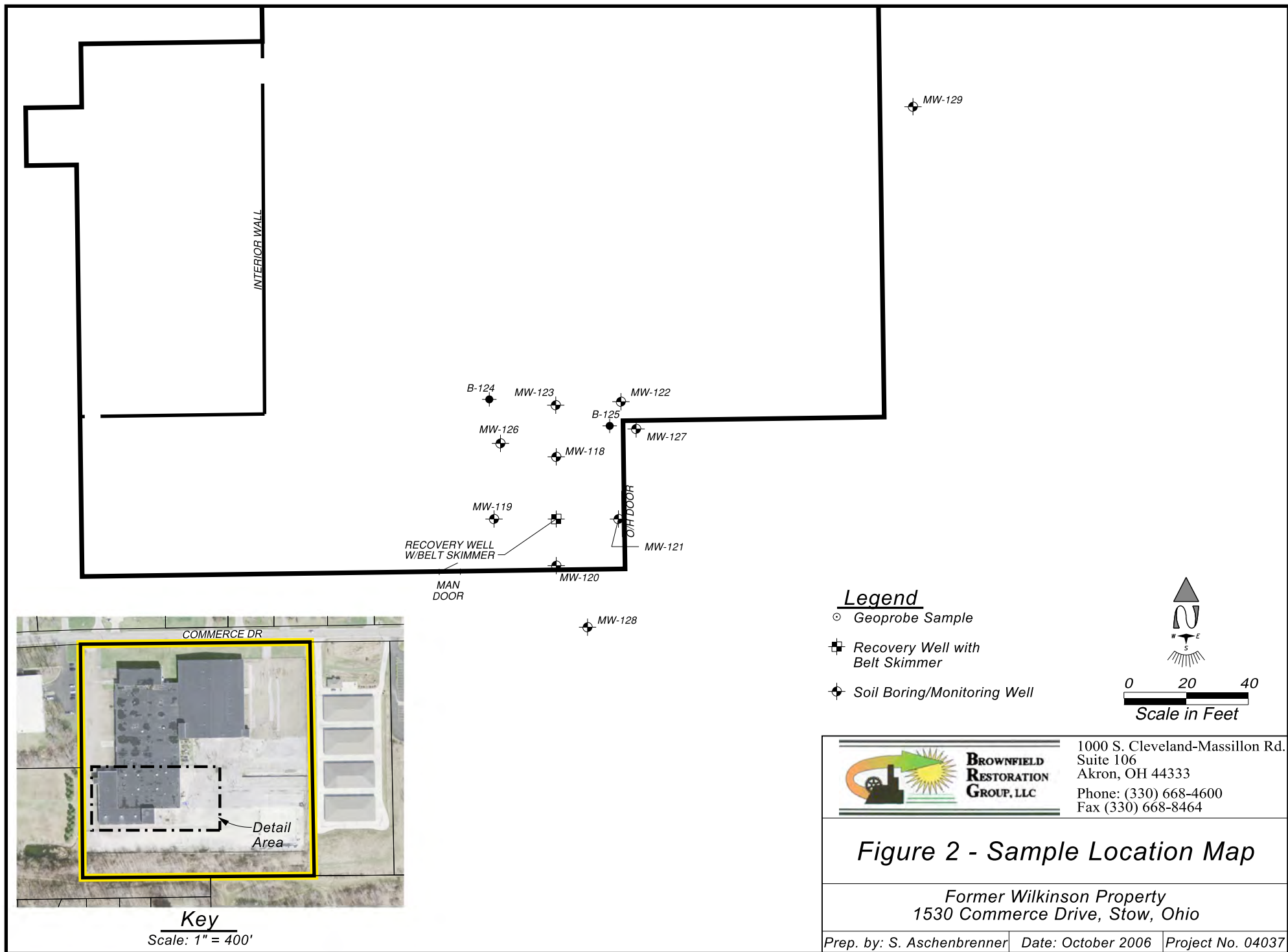
Former Wilkinson Property  
1530 Commerce Drive, Stow, Ohio

Prepared by: U.S.G.S.

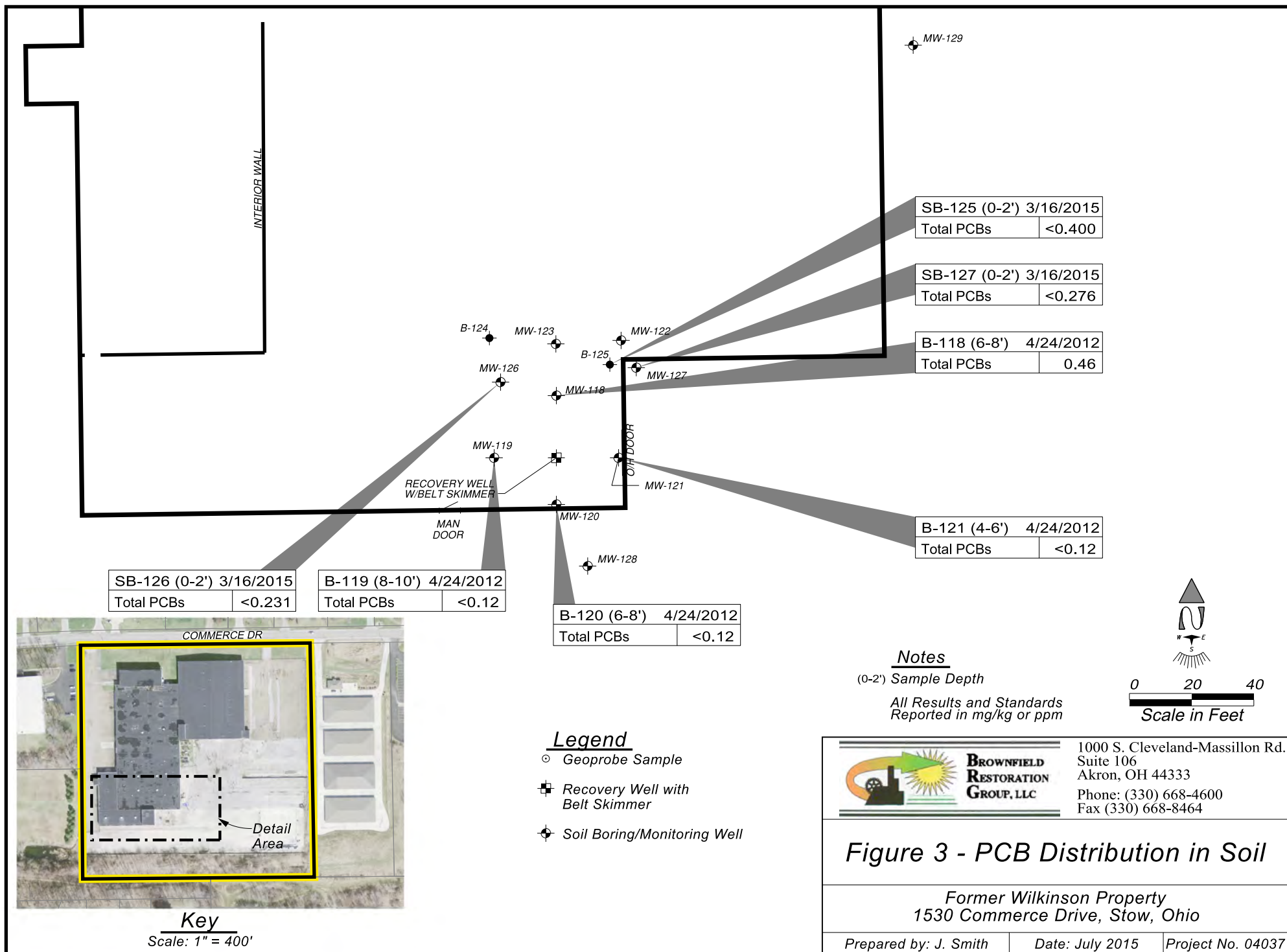
Date: July 2015

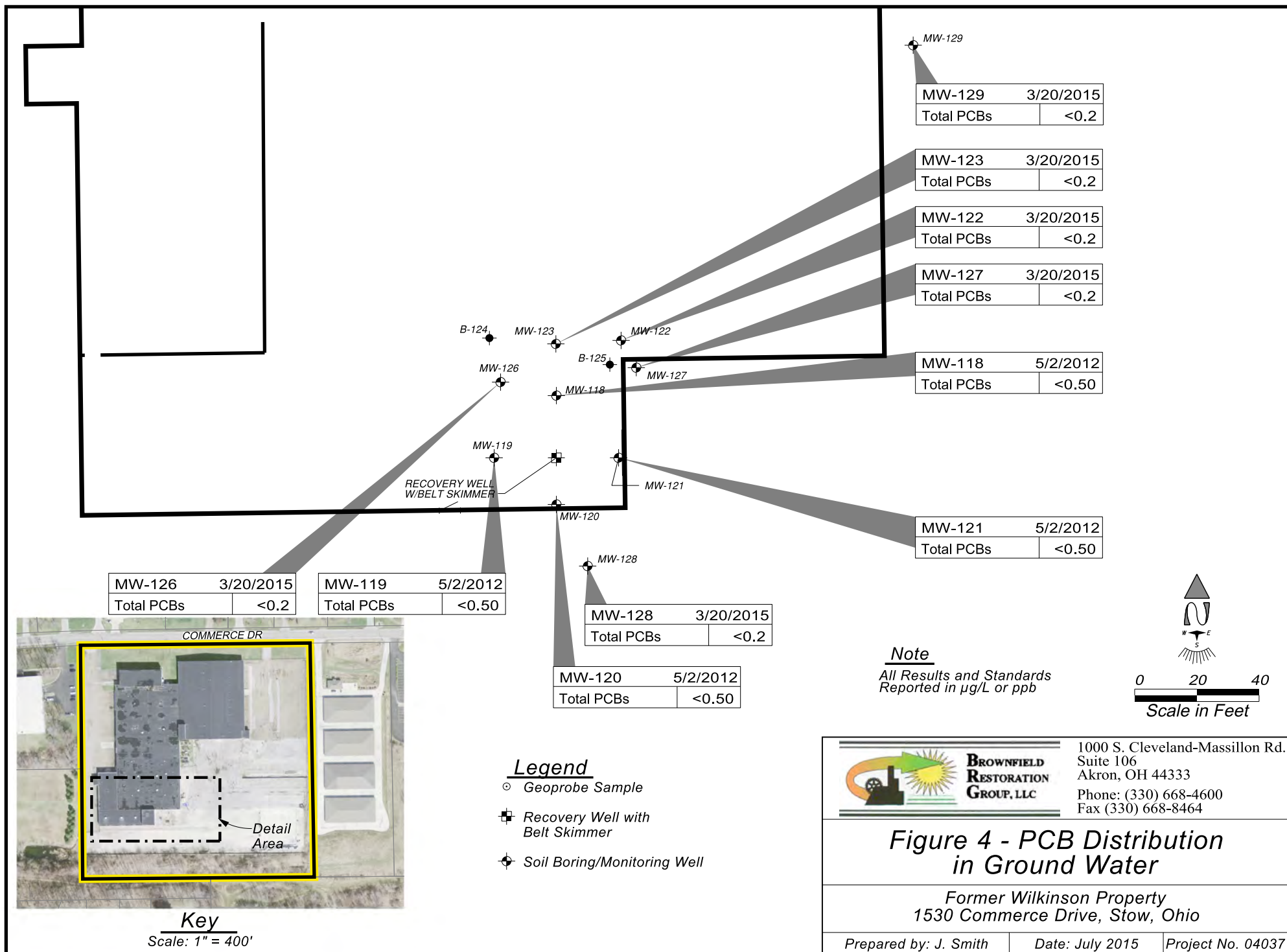
Project No. 04037

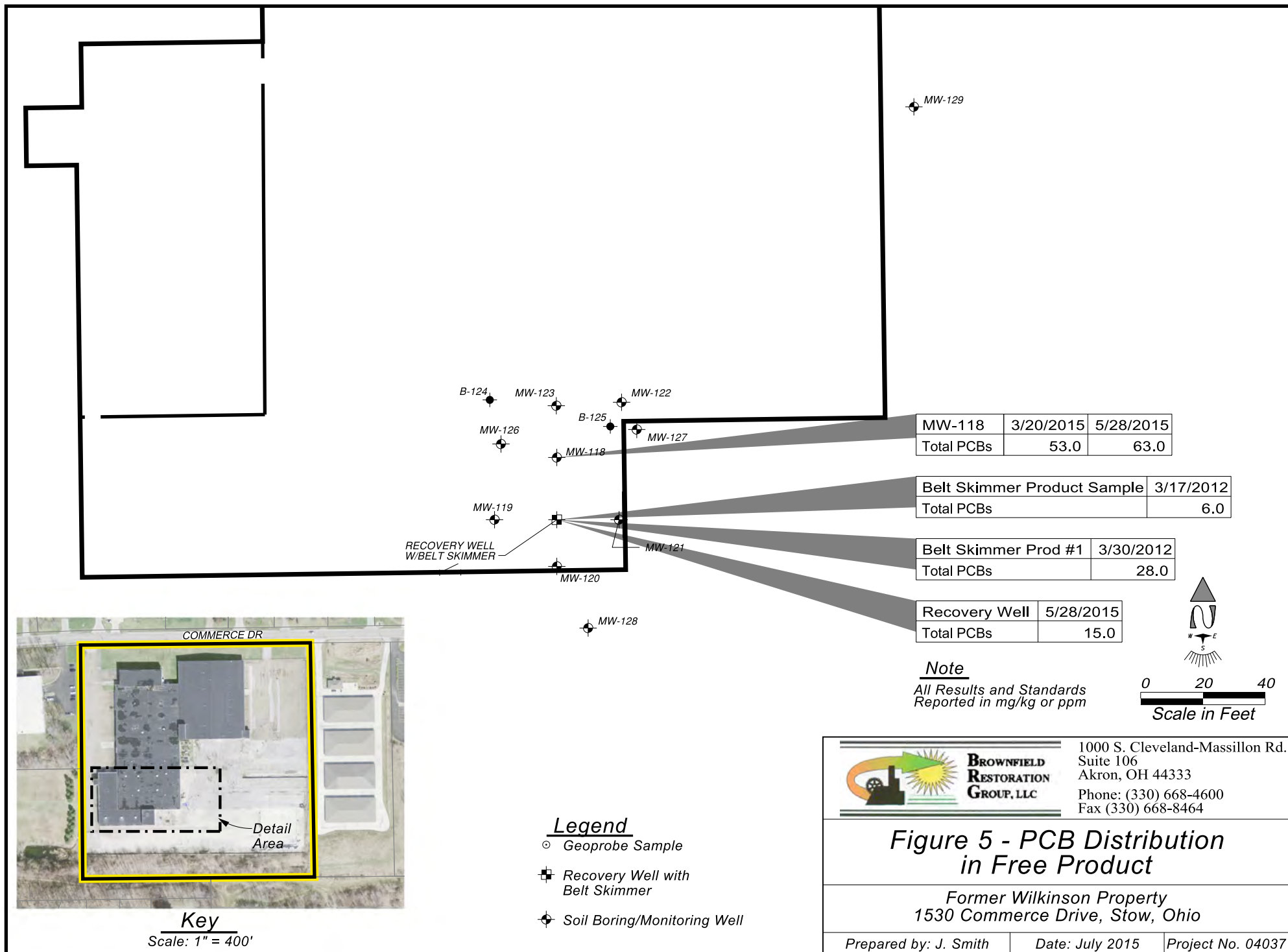


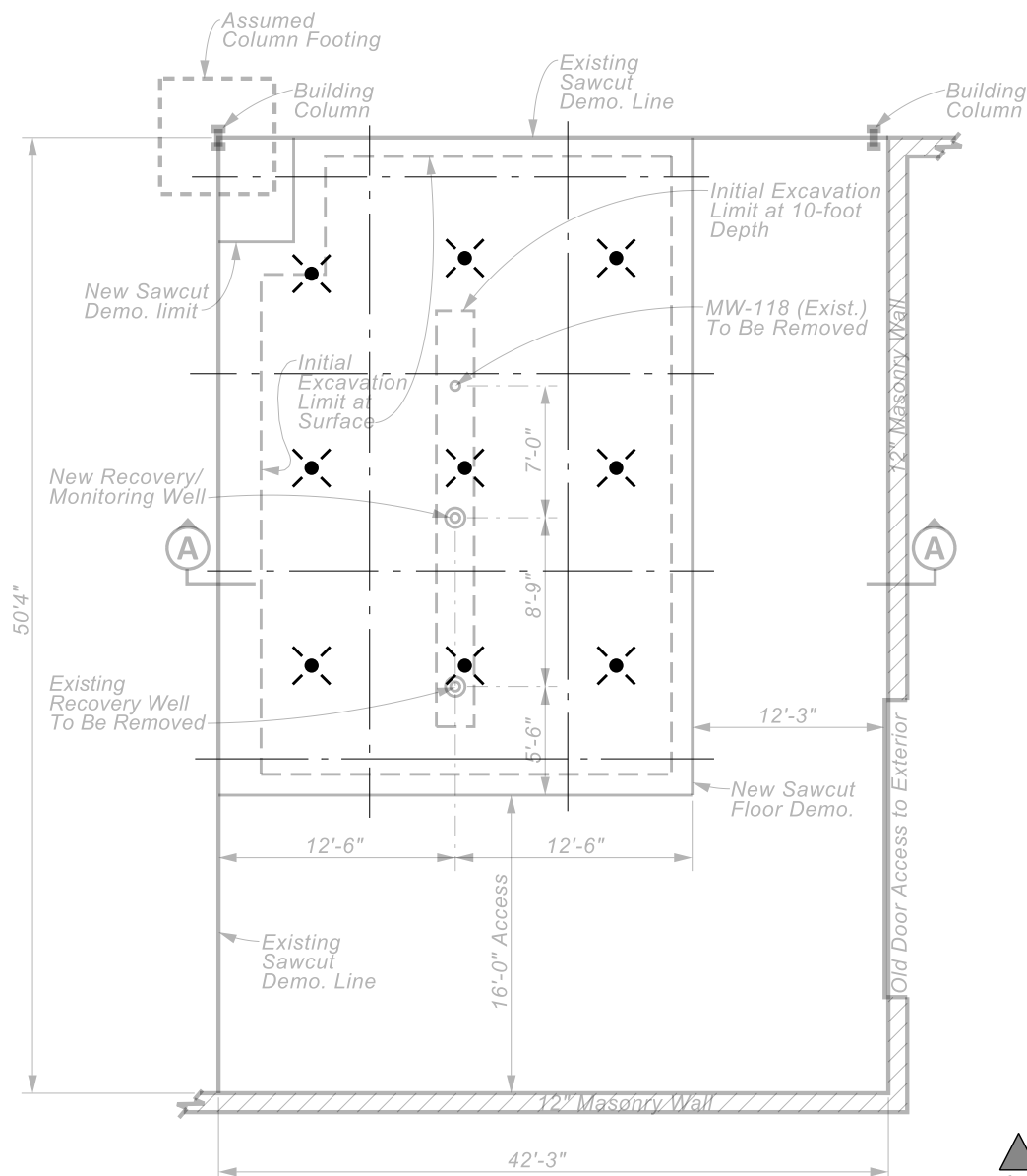












### Notes

- 1) 10 Ft. Grid Space for Borings.
- 2) Sample Intervals at each Boring:
  - 0-4 Ft.
  - 4-8 Ft.
  - 8-12 Ft.
  - > 12 Ft. (at Ground Water Table)
- 3) Samples to be Analyzed for PCBs.

### Legend

- ✕ Proposed Pre-Characterization Boring Location



1000 S. Cleveland-Massillon Rd.  
Suite 106  
Akron, OH 44333  
Phone: (330) 668-4600  
Fax (330) 668-8464

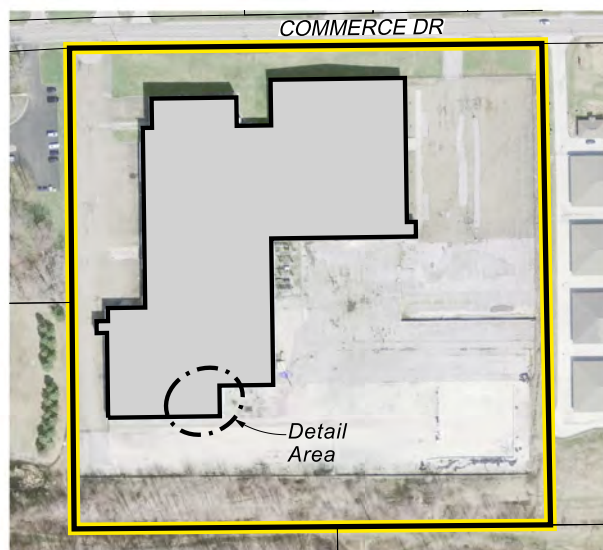
## Figure 6 - Pre-Excavation Soil Characterization Plan

Former Wilkinson Property  
1530 Commerce Drive, Stow, Ohio

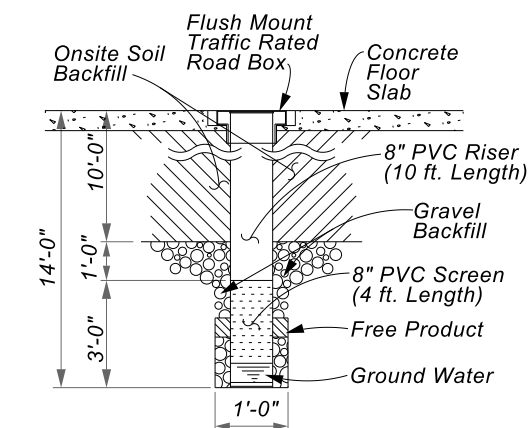
Prep. by: J. Smith

Date: May 2016

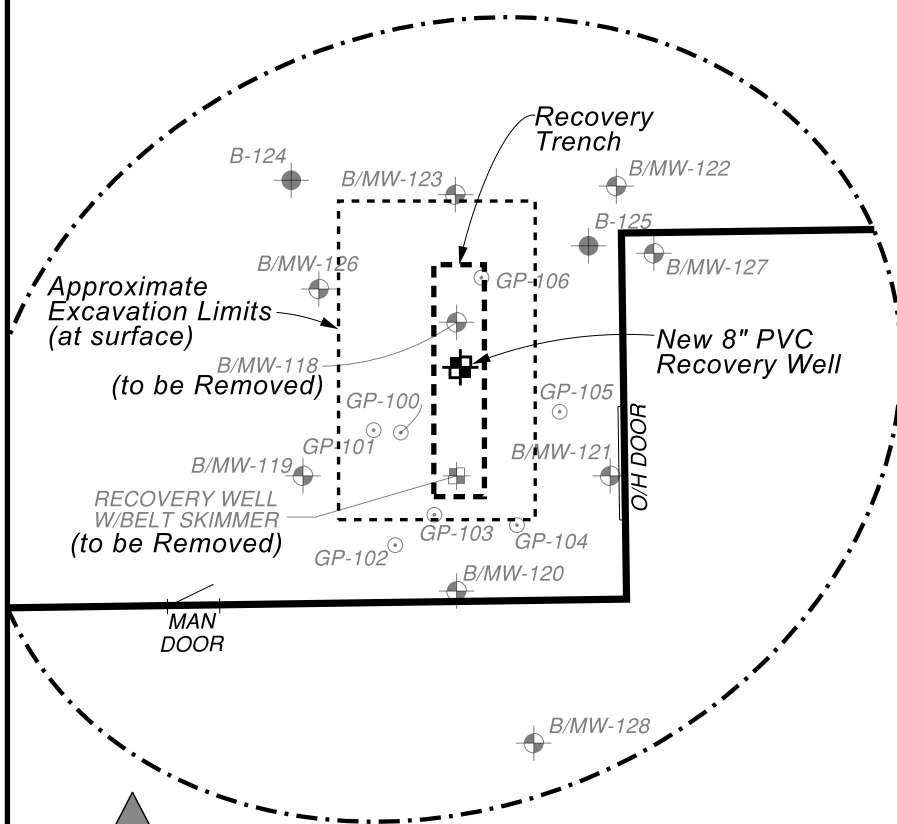
Project No. 04037



**Key**  
Scale: 1" = 300'



**Recovery Sump Cross Section**  
NTS

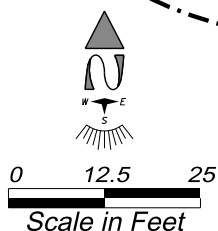


### Note

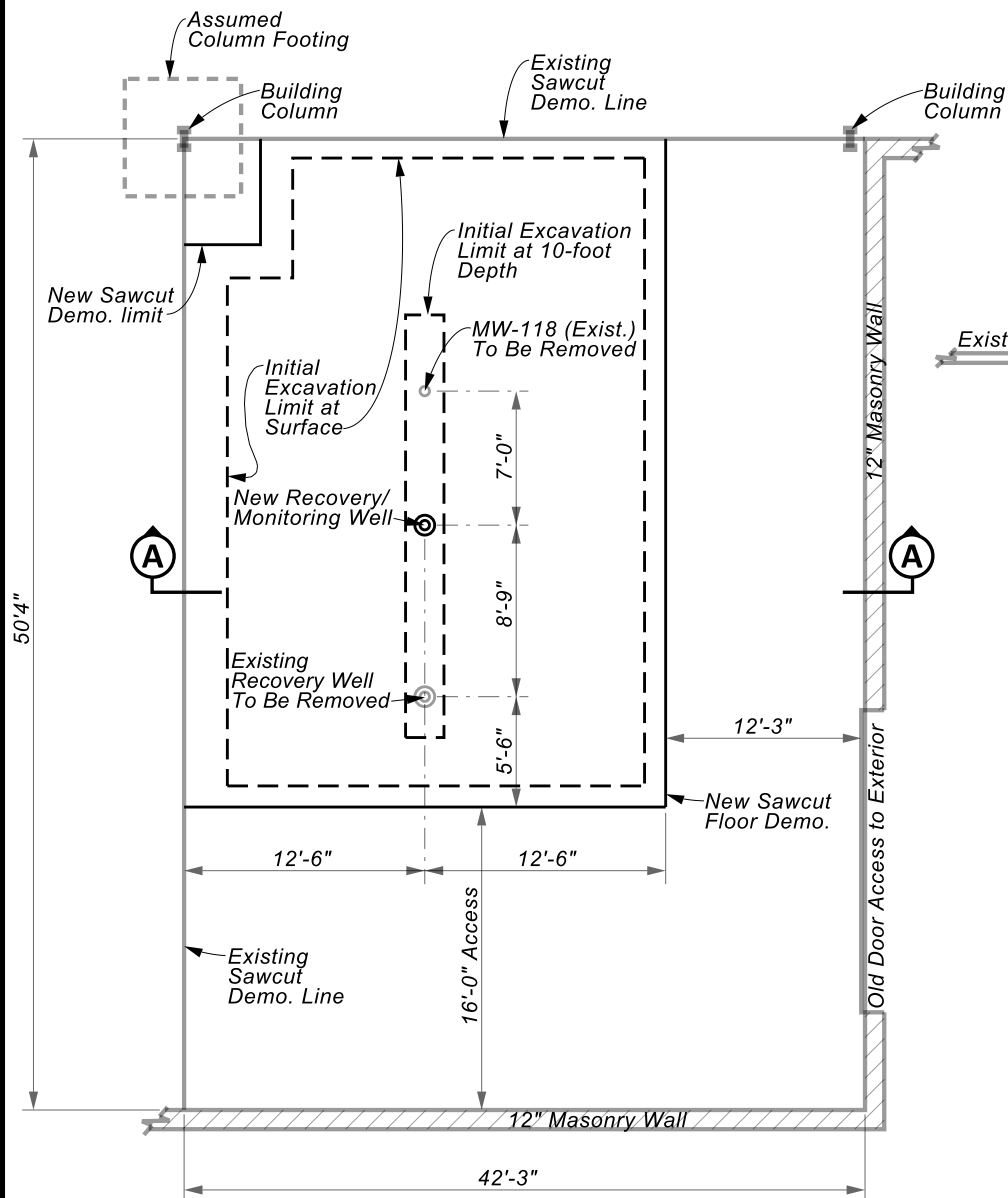
Location of New Recovery Well is approximate. To be located in the field to minimize obstructions to floor space use.

### Legend

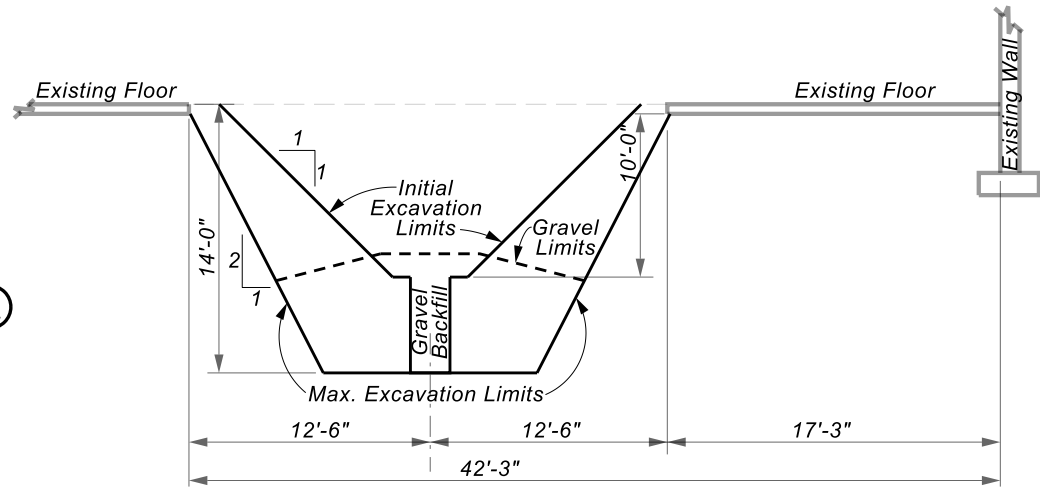
- Geoprobe Sample
- ⊠ Recovery Well with Belt Skimmer
- ⊙ Soil Boring/Monitoring Well



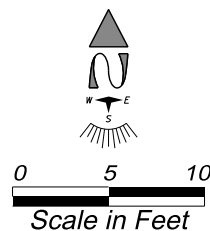
 <b>BROWNFIELD RESTORATION GROUP, LLC</b>	1000 S. Cleveland-Massillon Rd. Suite 106 Akron, OH 44333 Phone: (330) 668-4600 Fax (330) 668-8464	
	<b>Figure 7 - Proposed Oil Recovery Excavation and Sump Layout</b> Former Wilkinson Property 1530 Commerce Drive, Stow, Ohio	
Prep. by: J. Smith	Date: April 2016	Project No. 04037



**Remediation Site Plan**



**Remediation Excavation Cross Section A-A**



1000 S. Cleveland-Massillon Rd.  
Suite 106  
Akron, OH 44333  
Phone: (330) 668-4600  
Fax (330) 668-8464

**Figure 8 - Detailed Excavation  
and Sump Layout**

Former Wilkinson Property  
1530 Commerce Drive, Stow, Ohio

Prep. by: J. Smith

Date: April 2016

Project No. 04037



**ATTACHMENT B**  
Tables

**TABLE 1**  
**SUMMARY OF PCBs IN SOIL**

**Former Wilkinson Property**  
**Stow, Portage County, Ohio**

Chemical of Concern	B-118 6'-8'	B-119 8'-10'	B-120 6'-8	B-121 4'-6'	B-122 8'-10'	Applicable Ohio EPA Direct Contact Standards/Saturation Limits	
<i>Date Sampled:</i>	4/24/2012	4/24/2012	4/24/2012	4/25/2012	3/16/2015	C/I	C/E
<b>PCBs (mg/kg)</b>							
Aroclor 1016	<0.13	<0.12	<0.12	<0.12	NT	100	260
Aroclor 1221	<0.13	<0.12	<0.12	<0.12	NT	14	210
Aroclor 1232	<0.13	<0.12	<0.12	<0.12	NT	14	73
Aroclor 1242	<0.13	<0.12	<0.12	<0.12	NT	20	440
Aroclor 1248	<0.13	<0.12	<0.12	<0.12	NT	20	440
Aroclor 1254	<0.13	<0.12	<0.12	<0.12	NT	20	75
Aroclor 1260	0.46	<0.12	<0.12	<0.12	NT	20	440
Aroclor 1268	<0.13	<0.12	<0.12	<0.12	NT	NS	NS
<b>Total PCBs</b>	0.46	<0.12	<0.12	<0.12	NT	20	440
Chemical of Concern	B-123 0'-2'	B-124 4'-6'	SB-125 0'-2'	SB-126 0'-2'	SB-127 0'-2'	Applicable Ohio EPA Direct Contact Standards/Saturation Limits	
<i>Date Sampled:</i>	3/16/2015	3/16/2015	3/16/2015	3/16/2015	3/16/2015	C/I	C/E
<b>PCBs (mg/kg)</b>							
Aroclor 1016	NT	NT	NR	NR	NR	100	260
Aroclor 1221	NT	NT	NR	NR	NR	14	210
Aroclor 1232	NT	NT	NR	NR	NR	14	73
Aroclor 1242	NT	NT	NR	NR	NR	20	440
Aroclor 1248	NT	NT	NR	NR	NR	20	440
Aroclor 1254	NT	NT	NR	NR	NR	20	75
Aroclor 1260	NT	NT	NR	NR	NR	20	440
Aroclor 1268	NT	NT	NR	NR	NR	NS	NS
<b>Total PCBs</b>	NT	NT	<0.400	<0.231	<0.276	20	440

**Notes:**

Results & Standards in mg/kg as ppm.

NR - Not Reported.

Total PCBs equals sum of individual aroclors.

NS - No Standard for this compound.

NT - Not Tested.

**TABLE 2**  
**SUMMARY OF PCBs IN GROUND WATER**

**Former Wilkinson Property**  
**Stow, Portage County, Ohio**

Chemical of Concern	MW-119	MW-120	MW-121	MW-118	MW-122	MW-123	MW-126	MW-127	MW-128	MW-129	Ohio EPA UPUS
<i>Date Sampled:</i>	5/2/2012	5/2/2012	5/2/2012	5/2/2012	3/20/2015	3/20/2015	3/20/2015	3/20/2015	3/20/2015	3/20/2015	2014 Rules
<b>PCBs (µg/L)</b>											
Total PCBs	<0.50	<0.50	<0.50	<0.50	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.5

**Notes:**

UPUS - Unrestricted Potable Use Standard.

**TABLE 3**  
**SUMMARY OF PCBs IN FREE PRODUCT**

**Former Wilkinson Property**  
**Stow, Portage County, Ohio**

Chemical of Concern	Belt Skimmer Product Sample	Belt Skimmer Prod # 1	MW-118	Recovery Well	MW-118
<i>Date Sampled:</i>	<i>3/17/2012</i>	<i>3/30/2012</i>	<i>3/20/2015</i>	<i>5/28/2015</i>	<i>5/28/2015</i>
<b>PCBs (mg/kg)</b>					
Aroclor 1016	NR	ND	NR	ND	ND
Aroclor 1221	NR	ND	NR	ND	ND
Aroclor 1232	NR	ND	NR	ND	ND
Aroclor 1242	NR	ND	NR	ND	ND
Aroclor 1248	NR	ND	NR	ND	ND
Aroclor 1254	NR	ND	NR	ND	ND
Aroclor 1260	6.0	28	NR	15.0	63.0
<b>Total PCBs</b>	6.0	28.0	53.0	15.0	63.0

**Notes:**

NR - Not Reported.

ND - Not Detected

**ATTACHMENT C**

Boring Logs/Well Construction Diagrams

# FIELD BOREHOLE AND MONITORING WELL LOG

**BOREHOLE NO.:** B-118

**MONITORING WELL NO.:** MW-118

**PROJECT:** Former Wilkinson Property  
**CLIENT:** J.D. Williamson  
**JOB NO.:** 04037  
**GEOLOGIST:** J. Snyder  
**DATES DRILLED:** April 24, 2012

**DRILLING CO.:** HAD  
**METHOD OF DRILLING:** Geoprobe  
**SAMPLING METHODS:** Macrocore  
**ELEVATION (TOC):**

☒ Water level during drilling      ☒ Secondary water level during drilling      ☒ Static water level

DEPTH	SOIL SYMBOLS	SAMPLE	RECOVERY (inches)	STRATIGRAPHIC DESCRIPTION	PID (ppm) 1 1000	WELL CONSTRUCTION
0		1		CONCRETE and GRAVEL BASE, very little recovery (AR)	1.2	Concrete
2		2	18	Slightly Moist, Brown Silty SAND, very little recovery (SM)	6.4	2" PVC Riser
4		3			5.4	Bentonite
6		4	36	Moist, Gray Fine SAND (SP)	4.5	
8		5		-Coarsening, Increasing Moisture, Petroleum Odor at 7.0'	2.2	
10		6		Moist, Brown SILT (ML)	2.7	
12		7	38	-Increasing Gray Mottling and Clay at 8.5'	3.6	
14		8		Slightly Moist, Brown Silty SAND, Trace Fine Gravel (SM)	4.2	
16		9	40	Very Moist, Gray Fine SAND, Dark Staining, Petroleum Odor (SP)	3.7	
18		10		-Wet at 12.0'	3.7	
20				Moist, Brown SILT (ML)		
22				-Color Change to Gray, Increasing Moisture at 14.5'		
				-Wet at 17.0'		
				-Increasing Clay at 17.5'		
				-Decreasing Clay and Moisture at 18.0'		
				Boring terminated at 20.0'		

NOTES: Groundwater encountered at 12.0' during sampling.



# FIELD BOREHOLE AND MONITORING WELL LOG

**BOREHOLE NO.:** B-119

**MONITORING WELL NO.:** MW-119

**PROJECT:** Former Wilkinson Property  
**CLIENT:** J.D. Williamson  
**JOB NO.:** 04037  
**GEOLOGIST:** J. Snyder  
**DATES DRILLED:** April 24, 2012

**DRILLING CO.:** HAD  
**METHOD OF DRILLING:** Geoprobe  
**SAMPLING METHODS:** Macrocore  
**ELEVATION (TOC):**

☒ Water level during drilling      ☒ Secondary water level during drilling      ☒ Static water level

DEPTH	SOIL SYMBOLS	SAMPLE	RECOVERY (inches)	STRATIGRAPHIC DESCRIPTION	PID (ppm) 1 1000	WELL CONSTRUCTION
0		1		CONCRETE and GRAVEL BASE, very little recovery (AR)	3.9	Concrete
2		2	3	No Recovery from 0.5-4.5'	NR	Bentonite
4		3		Slightly Moist, Brown and Gray SILT (ML)	4.7	2" PVC Riser
6		4	41	-Increasing Sand at 7.0'	5.2	2" PVC Screen
8		5		-Concrete layer at 8.0-8.5' -Increasing Clay and Moisture at 8.5'	5.4	
10		6		Slightly Moist, Brown SILT (ML) -Increasing Moisture at 10.0'	3.8	
12		7	33	Very Moist to Wet, Gray SILT (ML) -Increasing Clay at 12.0'	4.7	
14		8			3.3	
16		9	36		5.1	
18		10		-Decreasing Moisture and Clay, Increasing Fine Sand at 19.0'	4.1	
20				Boring terminated at 20.0'		
22						

NOTES: Groundwater encountered at 11.5' during sampling.



# FIELD BOREHOLE AND MONITORING WELL LOG

**BOREHOLE NO.:** B-120

**MONITORING WELL NO.:** MW-120

**PROJECT:** Former Wilkinson Property  
**CLIENT:** J.D. Williamson  
**JOB NO.:** 04037  
**GEOLOGIST:** J. Snyder  
**DATES DRILLED:** April 24, 2012

**DRILLING CO.:** HAD  
**METHOD OF DRILLING:** Geoprobe  
**SAMPLING METHODS:** Macrocore  
**ELEVATION (TOC):**

☒ Water level during drilling      ☒ Secondary water level during drilling      ☒ Static water level

DEPTH	SOIL SYMBOLS	SAMPLE	RECOVERY (inches)	STRATIGRAPHIC DESCRIPTION	PID (ppm) 1 1000	WELL CONSTRUCTION
0		1		CONCRETE and GRAVEL BASE, very little recovery (AR)	6.4	Concrete
2		2	18	Slightly Moist, Dark Gray SILT, Some Fine Sand, Trace Gravel and Broken Concrete (ML) (Fill)	5.4	Bentonite
4		3		-Increasing Sand and Petroleum Odor at 4.5'	4.4	2" PVC Riser
6		4	41	-Increasing Moisture to Very Moist at 6.0'	6.0	
8		5		-Some Dark Staining at 7.0'	5.1	
10		6		-Strong Odor, Very Moist at 8.0'	4.3	
12		7	40	Slightly Moist, Brown SILT (ML)	4.6	Sandpack
14		8		Very Moist, Gray SILT, Some Clay (ML)	5.0	2" PVC Screen
16		9	40	-Wet at 12.0'	5.7	
18		10		-Decreasing Moisture at 12.5'	3.6	
20				-Increasing Moisture to Wet at 14.0'		
22				-Decreasing Moisture to Very Moist at 15.0'		
				Boring terminated at 20.0'		

NOTES: Groundwater encountered at 12.0' during sampling.





# FIELD BOREHOLE AND MONITORING WELL LOG

**BOREHOLE NO.:** B-121

**MONITORING WELL NO.:** MW-121

**PROJECT:** Former Wilkinson Property  
**CLIENT:** J.D. Williamson  
**JOB NO.:** 04037  
**GEOLOGIST:** J. Snyder  
**DATES DRILLED:** April 25, 2012

**DRILLING CO.:** HAD  
**METHOD OF DRILLING:** Geoprobe  
**SAMPLING METHODS:** Macrocore  
**ELEVATION (TOC):**

☒ Water level during drilling      ☒ Secondary water level during drilling      ☒ Static water level

DEPTH	SOIL SYMBOLS	SAMPLE	RECOVERY (inches)	STRATIGRAPHIC DESCRIPTION	PID (ppm) 1 1000	WELL CONSTRUCTION
0		1		CONCRETE, Very Little Recovery (AR)	3.9	Concrete
2		2	12	Slightly Moist, Dark Brown Silty Fine SAND, Some Gravel, Very Little Recovery (SM)	21.4	Bentonite
4		3		-Concrete at 4.0-4.5'	6.2	2" PVC Riser
6		4	28	Very Moist, Brown SAND and GRAVEL (GW)	3.7	
8		5		-Increasing Silt at 7.0'		
10		6		Moist, Brown and Gray SILT, Some Fine Sand (ML)	5.2	
		7	37	-Color Change to Gray, Increasing Clay, Decreasing Sand at 9.0'		
		8		-Wet at 10.0'	5.0	Sandpack
12		9		Very Moist to Wet, Brown SILT, Some Sand and Gravel (ML)	5.0	2" PVC Screen
14		10		-Decreasing Silt and Moisture at 13.0'	4.8	
16				Wet, Brown Silty SAND, Few Gravel (SM)	4.1	
18				-Decreasing Moisture, Increasing Silt at 15.5'	2.4	
20				Very Moist to Wet, Brown SILT, Some Clay (ML)		
22				Very Moist to Wet, Gray SILT, Some Clay (ML)		
				-Decreasing Moisture at 19.5'		
				Boring terminated at 20.0'		

NOTES: Groundwater encountered at 10.0' during sampling.

## RENEW Soil Boring Log

Soil Boring/Monitoring Well Number SB-122/MW-122

Client: <u>BDB &amp; Struktol</u>	Job No.: _____
Project: <u>Phase II Subsurface Investigation</u>	Date: <u>3/16 &amp; 3/17/2015</u>
Location: <u>1530 Commerce Drive, Stow, Ohio</u>	Geologist: <u>Paul Becks &amp; Tom Shalala</u>
Drilling Company: <u>Buckeye Probe</u>	Driller: <u>Bob K. &amp; Rick T.</u>
Drilling Method: <u>Geoprobe/Hollow Stem Augers</u>	Hammer Weight: <u>NA</u>
Boring Diameter: <u>2" &amp; 4 1/4"</u>	Sampling Method: <u>Macro Liner</u>
Initial Water Depth: <u>~10.5'</u>	Diameter: <u>1"</u>
Static Water Depth: <u>9.29'</u>	Other: <u>GW Elevation = 90.65'</u>
Screen Type: <u>PVC</u>	Slot Size: <u>0.010"</u>
Riser Type: <u>PVC</u>	TOC: <u>99.94'</u>

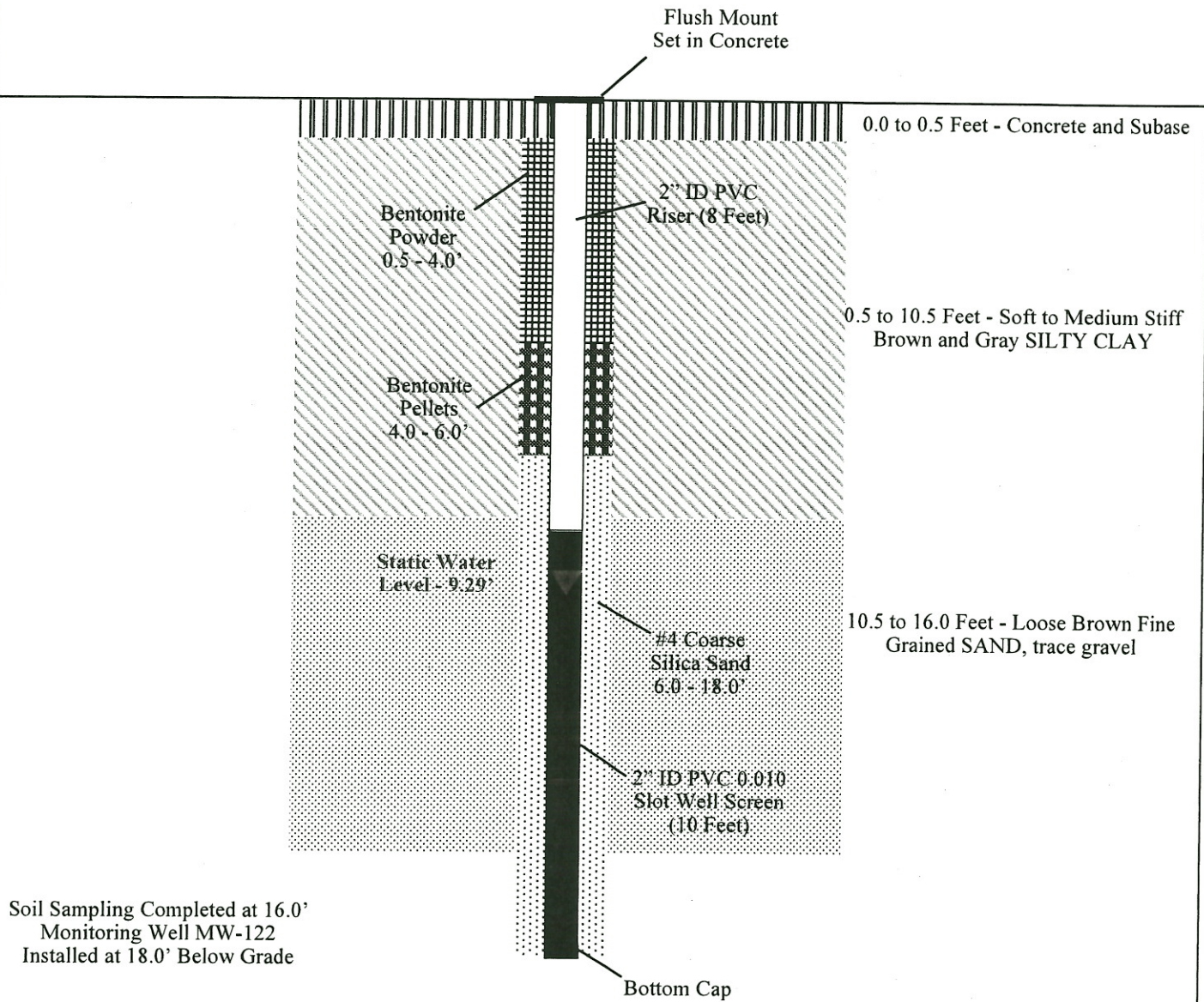
Depth (ft)	Sample Interval	Sample Number	Recovery	OVA Reading	Depth	Subsurface Geologic Description
0					0.0	Concrete and Subbase
1	0-2	1	1.5	1.3		Soft to medium stiff brown SILTY CLAY, trace sand, slightly moist, no unusual odor Note: Grades to all gray at ~ 3.8 feet  Note: Trace gravel at 7.0'
2						
3	2-4	2	1.5	2.3		
4						
5	4-6	3	1.0	3.5		
6						Loose brown SAND, fine to medium grained, trace gravel, trace silt, wet to saturated, no unusual odor and no indications of oil  Note: Some gray coloring and an increase in silt at ~ 15'
7	6-8	4	1.0	5.2		
8						
9	8-10*	5	1.5	6.8		
10					10.5	
11	10-12	6	1.5	9.6		Geoprobe Termination Depth at 16.0 Feet Over Drill with Augers and Install Permanent Monitoring Well MW-122 at 18' on 3/17/15
12						
13	12-14	7	1.5	10.4		
14						
15	14-16	8	1.5	12.0	16.0	

NA = Not Applicable

OVA = Organic Vapor Analyzer

\* Indicates Soil Sample Submitted to Laboratory for Analysis

# MW-122



Monitoring Well MW-122 Installed on 3/17/2015  
 Static Water Level Measurement Collected on 3/20/2015  
 Top of Casing Elevation - 99.94' Relative  
 Groundwater Elevation - 90.65'

Monitoring Well MW-122

Client:  
 BDB & Struktol

RENEW Project Number:  
 PJ2015-019

S  
I  
T  
E

Struktol Warehouse  
 1530 Commerce Drive  
 Stow, Ohio





## RENEW Soil Boring Log

Soil Boring/Monitoring Well Number SB-123/MW-123

Client: <u>BDB &amp; Struktol</u>	Job No.: _____
Project: <u>Phase II Subsurface Investigation</u>	Date: <u>3/16/2015</u>
Location: <u>1530 Commerce Drive, Stow, Ohio</u>	Geologist: <u>Paul Becks &amp; Tom Shalala</u>
Drilling Company: <u>Buckeye Probe</u>	Driller: <u>Bob K. &amp; Rick T.</u>
Drilling Method: <u>Geoprobe/Hollow Stem Augers</u>	Hammer Weight: <u>NA</u>
Boring Diameter: <u>2" &amp; 4 1/4"</u>	Sampling Method: <u>Macro Liner</u>
Initial Water Depth: <u>~10.5'</u>	Diameter: <u>1"</u>
Static Water Depth: <u>9.54'</u>	Other: <u>GW Elevation = 90.18'</u>
Screen Type: <u>PVC</u>	Slot Size: <u>0.010"</u>
Riser Type: <u>PVC</u>	TOC: <u>99.72'</u>

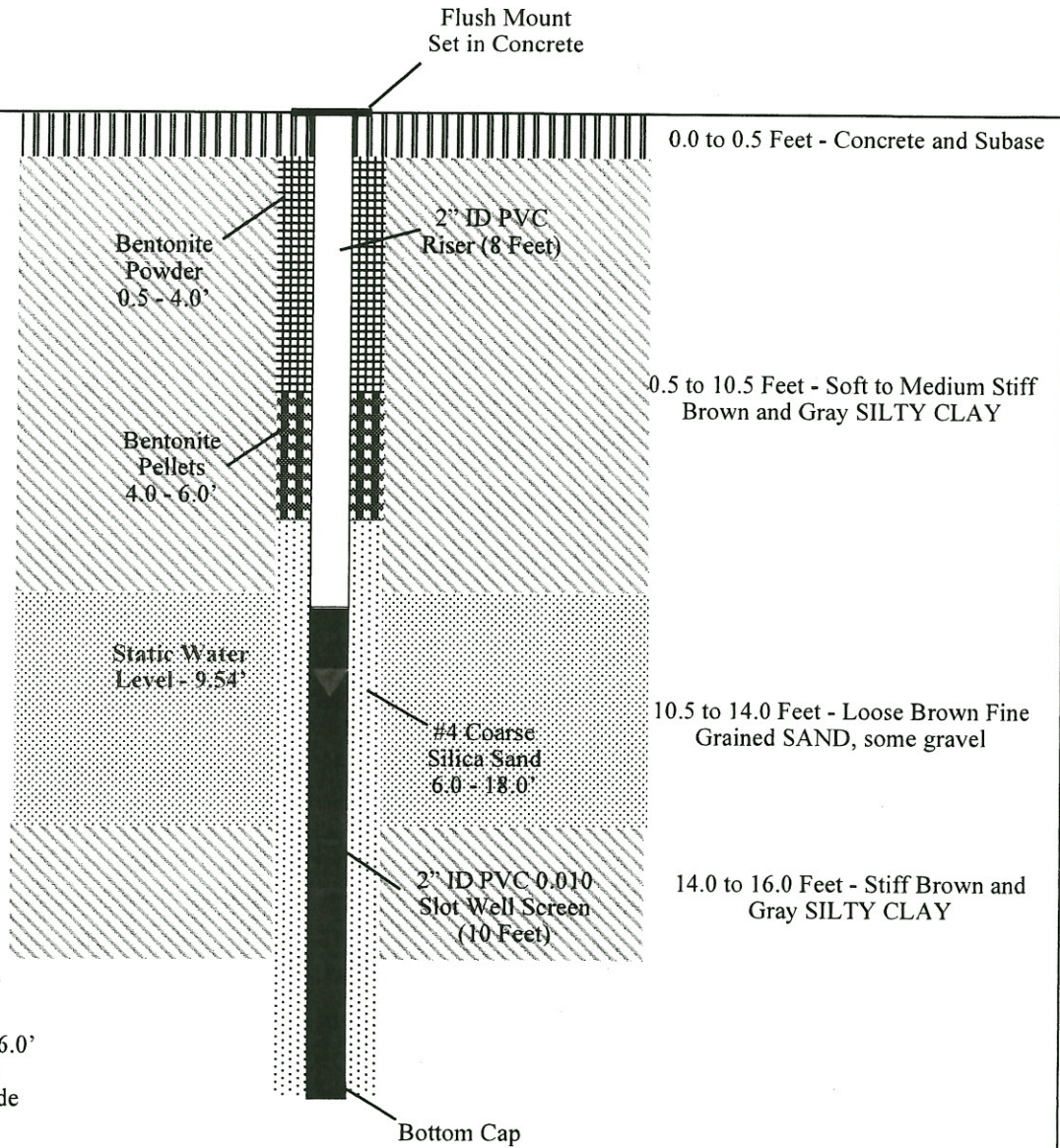
Depth (ft)	Sample Interval	Sample Number	Recovery	OVA Reading	Depth	Subsurface Geologic Description
0	0-2*	1	1.5	0.0	0.0	Concrete and Subbase
1						Stiff brown SILTY CLAY, trace sand, slightly moist, no unusual odor  Note: Thin fine grained sand seam at ~ 5', dry, no unusual odor  Note: Some sand with depth and grades to gray color at ~ 8'
2	2-4	2	2.0	1.3		
3						
4	4-6	3	2.0	2.7		
5						
6	6-8	4	2.0	3.1		
7						
8	8-10*	5	2.0	3.6		
9						
10	10-12	6	2.0	7.1	10.5	
11						Loose brown SAND, fine to medium grained, some gravel, wet to saturated, no unusual odor and no indications of oil
12	12-14	7	2.0	5.2		
13					14.0	
14	14-16	8	2.0	7.4		Medium stiff to stiff brown SILTY CLAY, trace sand, slightly moist, no unusual odor
15					16.0	
						Note: Grades to gray color & dry at ~ 15.5'
						Geoprobe Termination Depth at 16.0 Feet Over Drill with Augers and Install Permanent Monitoring Well MW-123 at 18'

NA = Not Applicable

OVA = Organic Vapor Analyzer

\* Indicates Soil Sample Submitted to Laboratory for Analysis

# MW-123



Soil Sampling Completed at 16.0'  
Monitoring Well MW-123  
Installed at 18.0' Below Grade

Monitoring Well MW-123 Installed on 3/16/2015  
Static Water Level Measurement Collected on 3/20/2015  
Top of Casing Elevation - 99.72' Relative  
Groundwater Elevation - 90.18'

Monitoring Well MW-123

Client:  
BDB & Struktol

RENEW Project Number:  
PJ2015-019

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Struktol Warehouse  
1530 Commerce Drive  
Stow, Ohio



Renew Environmental LLC



## RENEW Soil Boring Log

Soil Boring/Monitoring Well Number SB-124

Client: <u>BDB &amp; Struktol</u>	Job No.: _____
Project: <u>Phase II Subsurface Investigation</u>	Date: <u>3/16/2015</u>
Location: <u>1530 Commerce Drive, Stow, Ohio</u>	Geologist: <u>Paul Becks &amp; Tom Shalala</u>
Drilling Company: <u>Buckeye Probe</u>	Driller: <u>Bob K. &amp; Rick T.</u>
Drilling Method: <u>Geoprobe</u>	Hammer Weight: <u>NA</u>
Boring Diameter: <u>2"</u>	Sampling Method: <u>Macro Liner</u>
Initial Water Depth: <u>~8.0'</u>	Diameter: <u>1"</u>
Screen Type: <u>NA</u>	Other: <u>NA</u>
Riser Type: <u>NA</u>	Slot Size: <u>NA</u>
	TOC: <u>NA</u>

Depth (ft)	Sample Interval	Sample Number	Recovery	OVA Reading	Depth	Subsurface Geologic Description
0	0-2	1	1.5	0.0	0.0	Concrete and Subase
1					Soft to medium stiff brown SILTY CLAY, some sand, some gravel, slightly moist, no unusual odor	
2	2-4	2	2.0	0.2		
3						
4	4-6*	3	2.0	1.2		Note: Less sand and gravel with depth & moisture increase at ~ 4.5' (wet seam), no unusual odor
5						
6	6-8	4	2.0	0.6	8.0	Note: Decrease in moisture with depth
7						
8	8-10	5	1.5	1.5	10.5	Loose to slightly dense brown SAND, fine grained, well sorted, wet to saturated, no unusual odor and no indications of oil
9						
10	10-12	6	2.0	5.5	16.0	Stiff gray SILTY SANDY CLAY, slightly moist to moist, no unusual odor  Note: Wet to saturated seams from ~ 12 to 16'
11						
12	12-14	7	2.0	20.5		
13						
14	14-16	8	2.0	30.5	16.0	
15						
						Geoprobe Termination Depth at 16.0 Feet No Permanent Monitoring Well Installed

NA = Not Applicable

OVA = Organic Vapor Analyzer

\* Indicates Soil Sample Submitted to Laboratory for Analysis

# RENEW Soil Boring Log

Soil Boring/Monitoring Well Number SB-125

Client: BDB & Struktol	Job No.:
Project: Phase II Subsurface Investigation	Date: 3/16/2015
Location: 1530 Commerce Drive, Stow, Ohio	Geologist: Paul Becks & Tom Shalala
Drilling Company: Buckeye Probe	Driller: Bob K. & Rick T.
Drilling Method: Geoprobe	Hammer Weight: NA
Boring Diameter: 2"	Sampling Method: Macro Liner
Initial Water Depth: NA	Static Water Depth: NA
Screen Type: NA	Diameter: NA
Riser Type: NA	Length: NA
	Slot Size: NA
	TOC: NA

Depth (ft)	Sample Interval	Sample Number	Recovery	OVA Reading	Depth	Subsurface Geologic Description
0	0-2*	1	0.5	5.0	0.0	Concrete and Subbase
1					1.0	Soft CLAY and gravel fill material, strong petroleum hydrocarbon odor
2						Geoprobe Termination Depth at 1.0 Foot Due to Refusal on Concrete
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

NA = Not Applicable

OVA = Organic Vapor Analyzer

\* Indicates Soil Sample Submitted to Laboratory for Analysis

## RENEW Soil Boring Log

Soil Boring/Monitoring Well Number SB-126/MW-126

Client: <u>BDB &amp; Struktol</u>	Job No.: _____
Project: <u>Phase II Subsurface Investigation</u>	Date: <u>3/16/2015</u>
Location: <u>1530 Commerce Drive, Stow, Ohio</u>	Geologist: <u>Paul Becks &amp; Tom Shalala</u>
Drilling Company: <u>Buckeye Probe</u>	Driller: <u>Bob K. &amp; Rick T.</u>
Drilling Method: <u>Geoprobe/Hollow Stem Augers</u>	Hammer Weight: <u>NA</u>
Boring Diameter: <u>2" &amp; 4 1/4"</u>	Sampling Method: <u>Macro Liner</u>
Initial Water Depth: <u>~10.0'</u>	Static Water Depth: <u>10.89'</u>
Screen Type: <u>PVC</u>	Diameter: <u>1"</u>
Riser Type: <u>PVC</u>	Other: <u>GW Elevation = 88.70'</u>
	Slot Size: <u>0.010"</u>
	TOC: <u>99.59'</u>

Depth (ft)	Sample Interval	Sample Number	Recovery	OVA Reading	Depth	Subsurface Geologic Description
0	0-2*	1	1.0	0.0	0.0	Concrete and Subase
1					2.0	Loose brown SAND, fine grained, slightly moist, very slight unusual odor
2	2-4	2	1.0	0.0	4.0	Soft to medium stiff brown SILTY CLAY, trace sand, slightly moist, no unusual odor
3					6.0	Loose to slightly dense SAND, coarse grained, some gravel, slightly moist, no unusual odor
4	4-6	3	1.5	0.0		Stiff brown SILTY CLAY, trace sand, slightly moist, no unusual odor
5						Note: Grades to gray color at ~ 7.5'
6	6-8	4	2.0	0.0		Note: Less clay with depth & wet to saturated at ~ 10', no unusual odor and no indications of oil
7						Note: Slightly moist with wet seams from ~ 12 to 16'
8	8-10	5	1.0	1.5		
9						
10	10-12	6	1.0	2.8		
11						
12	12-14	7	2.0	1.3		
13						
14	14-16	8	2.0	0.0		
15					16.0	Geoprobe Termination Depth at 16.0 Feet Over Drill with Augers and Install Permanent Monitoring Well MW-126 at 18'

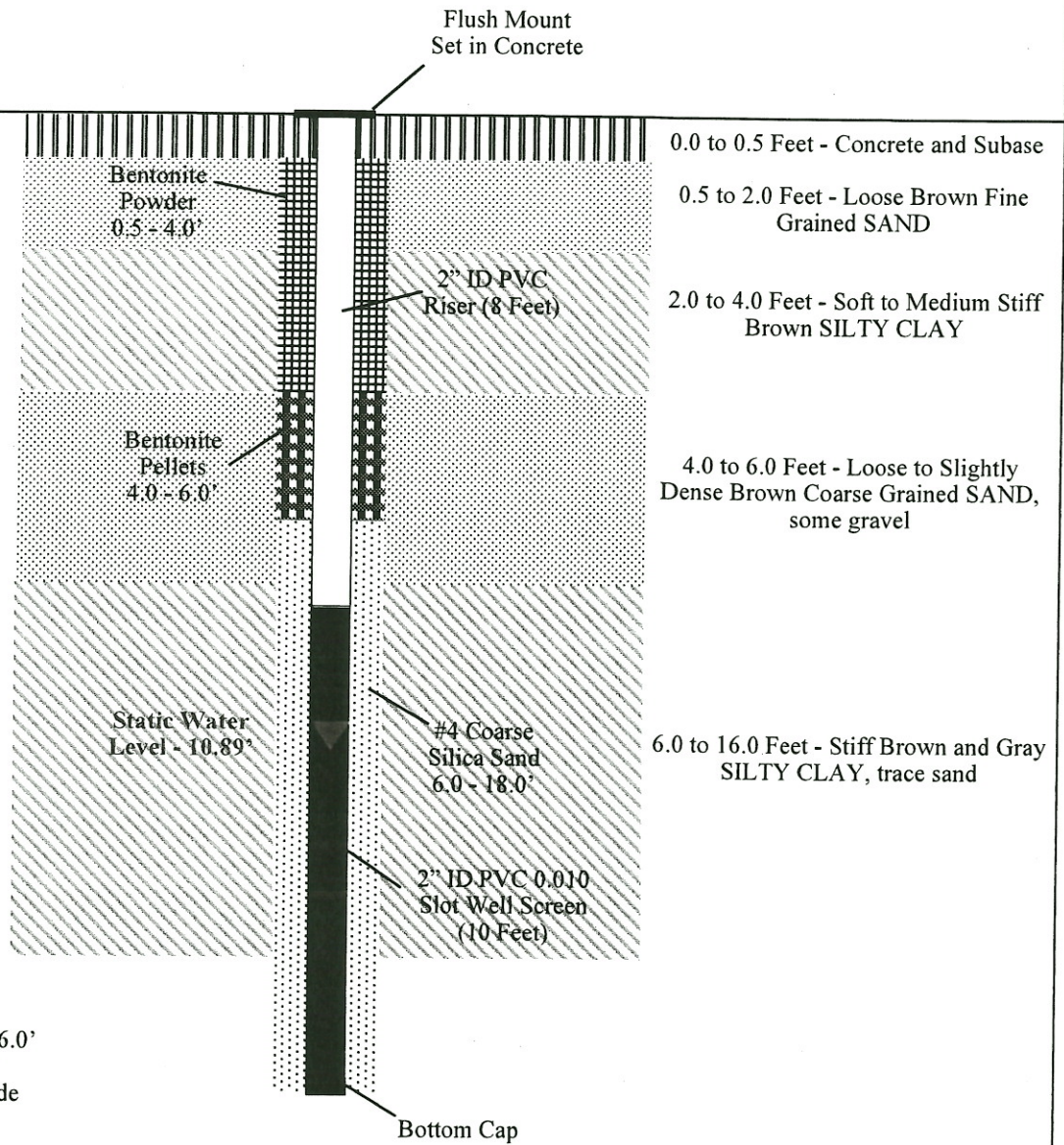
NA = Not Applicable

OVA = Organic Vapor Analyzer

\* Indicates Soil Sample Submitted to Laboratory for Analysis



# MW-126



Soil Sampling Completed at 16.0'  
Monitoring Well MW-126  
Installed at 18.0' Below Grade

Monitoring Well MW-126 Installed on 3/16/2015  
Static Water Level Measurement Collected on 3/20/2015  
Top of Casing Elevation - 99.59 Relative  
Groundwater Elevation - 88.70 Relative

Monitoring Well MW-126

Client:

BDB & Struktol

RENEW Project Number:  
PJ2015-019

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Struktol Warehouse  
1530 Commerce Drive  
Stow, Ohio



RENEW Environmental, LLC

# RENEW Soil Boring Log

Soil Boring/Monitoring Well Number SB-127/MW-127

Client: BDB & Struktol	Job No.:
Project: Phase II Subsurface Investigation	Date: 3/16/2015
Location: 1530 Commerce Drive, Stow, Ohio	Geologist: Paul Becks & Tom Shalala
Drilling Company: Buckeye Probe	Driller: Bob K. & Rick T.
Drilling Method: Geoprobe/Hollow Stem Augers	Hammer Weight: NA
Boring Diameter: 2" & 4 1/4"	Sampling Method: Macro Liner
Initial Water Depth: ~15.0'	Static Water Depth: 9.29'
Screen Type: PVC	Diameter: 2"
Riser Type: PVC	Diameter: 2"
	Length: 10'
	Length: 10'
	Other: GW Elevation = 90.22'
	Slot Size: 0.010"
	TOC: 99.51'

Depth (ft)	Sample Interval	Sample Number	Recovery	OVA Reading	Depth	Subsurface Geologic Description
0	0-2	1	0.0	NA	0.0	Concrete and Subase to ~ 4'
1					4.0	
2	2-4	2	0.0	NA		Loose brown SAND fill material, fine grained, well sorted, wet, no unusual odor
3						
4	4-6	3	1.5	0.0	5.0	Note: Sand fill is saturated, no unusual odor, no sheen
5						
6	6-8*	4	2.0	0.0		Stiff gray SILTY CLAY, trace sand, slightly moist, no unusual odor
7						
8	8-10	5	1.5	0.0		Note: Increase in sand with some gravel at ~ 10', moist to slightly wet
9						
10	10-12	6	2.0	0.0		Note: Grades to brown in color
11					11.8	
12	12-14	7	1.5	0.0		Dense brown SAND, some gravel, some silt, moist to slightly wet, no unusual odor
13						
14	14-16	8	2.0	0.0		Note: Wet to saturated seam at ~ 15', no unusual odor and no indications of oil
15						
16	17-18	9	2.0	0.0		
17					17.0	
18	18-20	10	2.0	0.0		Soft gray SANDY SILTY CLAY, wet to saturated, no unusual odor
19					20.0	
						Geoprobe Termination Depth at 20.0 Feet Over Drill with Augers and Install Permanent Monitoring Well MW-127 at 20'

NA = Not Applicable

OVA = Organic Vapor Analyzer

\* Indicates Soil Sample Submitted to Laboratory for Analysis



# MW-127

Flush Mount  
Set in Concrete

0.0 to 4.0 Feet - Concrete and Subase

4.0 to 5.0 Feet - Loose Brown Fine  
Grained SAND Fill Material

Bentonite  
Powder  
0.5 - 6.0'

2" ID PVC  
Riser (10 Feet)

5.0 to 11.8 Feet - Stiff Gray and  
Brown SILTY CLAY

Bentonite  
Pellets  
6.0 - 8.0'

Static Water  
Level - 9.29'

#4 Coarse  
Silica Sand  
8.0 - 20.0'

11.8 to 17.0 Feet - Dense Brown  
Coarse Grained SAND, some silt

2" ID PVC 0.010  
Slot Well Screen  
(10 Feet)

Soil Sampling Completed at 20.0'  
Monitoring Well MW-127  
Installed at 20.0' Below Grade

17.0 to 20.0 Feet - Soft Gray SANDY  
SILTY CLAY

Bottom Cap

Monitoring Well MW-127 Installed on 3/16/2015  
Static Water Level Measurement Collected on 3/20/2015  
Top of Casing Elevation - 99.51 Relative  
Groundwater Elevation - 90.22 Relative

Monitoring Well MW-127

Client:

BDB & Struktol

RENEW Project Number:  
PJ2015-019

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Struktol Warehouse  
1530 Commerce Drive  
Stow, Ohio



RENE Environmental, LLC

**ATTACHMENT D**  
Laboratory Analytical Reports,  
Chain-of-Custody Forms and Affidavits

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

4101 Shuffel Street NW

North Canton, OH 44720

Tel: (330)497-9396

TestAmerica Job ID: 240-51267-1

Client Project/Site: Struktol Warehouse

For:

Brownfield Restoration Group

1000 South Cleveland-Massillon Rd

Suite 106

Akron, Ohio 44333

Attn: Paul Kuonen



Authorized for release by:

6/4/2015 8:17:06 AM

Nathan Pietras, Project Manager II

(330)966-8296

[nathan.pietras@testamericainc.com](mailto:nathan.pietras@testamericainc.com)

Designee for

Amy McCormick, Project Manager II

(330)966-9787

[amy.mccormick@testamericainc.com](mailto:amy.mccormick@testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



### LINKS

Review your project  
results through

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Have a Question?



Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

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## Definitions/Glossary

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)



## Case Narrative

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

**Job ID: 240-51267-1**

**Laboratory: TestAmerica Canton**

Narrative

### CASE NARRATIVE

**Client: Brownfield Restoration Group**

**Project: Struktol Warehouse**

**Report Number: 240-51267-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

TestAmerica utilizes USEPA approved methods, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated and were analyzed in accordance with Ohio Voluntary Action Program protocols, where applicable.

A summary of QC data for these analyses is included at the back of the report.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

#### RECEIPT

The samples were received on 5/28/2015 10:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 21.2° C.

#### POLYCHLORINATED BIPHENYLS (PCBS)

Samples RECOVERY WELL (240-51267-1) and MW-118 (240-51267-2) were analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA SW-846 Method 8082. The samples were prepared on 06/01/2015 and analyzed on 06/02/2015.

Surrogates are added during the extraction process prior to dilution. When the sample dilution is 5X or greater, surrogate recoveries are diluted out and no corrective action is required. All of the samples in this data set analyzed for PCBs were subjected to the sulfuric acid cleanup procedure before instrumental analysis, per EPA Method 3665A.

Samples RECOVERY WELL (240-51267-1)[5X] and MW-118 (240-51267-2)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Method(s) 8082: The following samples appear to contain polychlorinated biphenyls (PCBs); however, due to weathering or other environmental processes, the PCBs in the sample do not closely match any of the laboratory's Aroclor standards used for instrument

RELEASED  
DATE 5/24/17  
RIN # 2017-00553A  
INITIALS JgW



## Case Narrative

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

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### Job ID: 240-51267-1 (Continued)

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#### Laboratory: TestAmerica Canton (Continued)

calibration: RECOVERY WELL (240-51267-1) and MW-118 (240-51267-2). The samples have been quantified and reported as a mixture of Aroclors 1254 and 1260. Due to the poor match with the Aroclor standard(s), there is increased qualitative and quantitative uncertainty associated with this result.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

## Method Summary

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

Method	Method Description	Protocol	Laboratory
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL CAN

### Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

## Sample Summary

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-51267-1	RECOVERY WELL	Waste	05/28/15 09:00	05/28/15 10:10
240-51267-2	MW-118	Waste	05/28/15 09:15	05/28/15 10:10

## Detection Summary

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

### Client Sample ID: RECOVERY WELL

Lab Sample ID: 240-51267-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor 1260	15000		1000		ug/Kg	5		8082	Total/NA

### Client Sample ID: MW-118

Lab Sample ID: 240-51267-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor 1260	63000		1300		ug/Kg	10		8082	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

# Client Sample Results

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

**Client Sample ID: RECOVERY WELL**

**Date Collected: 05/28/15 09:00**

**Date Received: 05/28/15 10:10**

**Lab Sample ID: 240-51267-1**

**Matrix: Waste**

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:18	5
Aroclor 1221	ND		1100		ug/Kg		06/01/15 13:37	06/02/15 17:18	5
Aroclor 1232	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:18	5
Aroclor 1242	ND		1400		ug/Kg		06/01/15 13:37	06/02/15 17:18	5
Aroclor 1248	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:18	5
Aroclor 1254	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:18	5
<b>Aroclor 1260</b>	<b>15000</b>		1000		ug/Kg		06/01/15 13:37	06/02/15 17:18	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	50		29 - 173	06/01/15 13:37	06/02/15 17:18	5
DCB Decachlorobiphenyl	47		13 - 185	06/01/15 13:37	06/02/15 17:18	5

TestAmerica Canton

# Client Sample Results

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

**Client Sample ID: MW-118**

**Date Collected: 05/28/15 09:15**

**Date Received: 05/28/15 10:10**

**Lab Sample ID: 240-51267-2**

**Matrix: Waste**

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		1800		ug/Kg		06/01/15 13:37	06/02/15 17:35	10
Aroclor 1221	ND		2100		ug/Kg		06/01/15 13:37	06/02/15 17:35	10
Aroclor 1232	ND		1700		ug/Kg		06/01/15 13:37	06/02/15 17:35	10
Aroclor 1242	ND		2800		ug/Kg		06/01/15 13:37	06/02/15 17:35	10
Aroclor 1248	ND		1900		ug/Kg		06/01/15 13:37	06/02/15 17:35	10
Aroclor 1254	ND		1200		ug/Kg		06/01/15 13:37	06/02/15 17:35	10
<b>Aroclor 1260</b>	<b>63000</b>		1300		ug/Kg		06/01/15 13:37	06/02/15 17:35	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	88		29 - 173	06/01/15 13:37	06/02/15 17:35	10
DCB Decachlorobiphenyl	101		13 - 185	06/01/15 13:37	06/02/15 17:35	10

TestAmerica Canton

# Surrogate Summary

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Waste

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCX2 (29-173)	DCB2 (13-185)
240-51267-1	RECOVERY WELL	50	47
240-51267-2	MW-118	88	101
LCS 240-183191/9-A	Lab Control Sample	107	145
MB 240-183191/8-A	Method Blank	104	130

### Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl

# QC Sample Results

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 240-183191/8-A

Matrix: Waste

Analysis Batch: 183390

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 183191

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:52	1
Aroclor 1221	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:52	1
Aroclor 1232	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:52	1
Aroclor 1242	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:52	1
Aroclor 1248	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:52	1
Aroclor 1254	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:52	1
Aroclor 1260	ND		1000		ug/Kg		06/01/15 13:37	06/02/15 17:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	104		29 - 173	06/01/15 13:37	06/02/15 17:52	1
DCB Decachlorobiphenyl	130		13 - 185	06/01/15 13:37	06/02/15 17:52	1

Lab Sample ID: LCS 240-183191/9-A

Matrix: Waste

Analysis Batch: 183390

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 183191

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aroclor 1016	10000	10100		ug/Kg		101	66 - 149
Aroclor 1260	10000	11100		ug/Kg		111	50 - 155

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	107		29 - 173
DCB Decachlorobiphenyl	145		13 - 185

TestAmerica Canton



## QC Association Summary

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

### GC Semi VOA

#### Prep Batch: 183191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-51267-1	RECOVERY WELL	Total/NA	Waste	3580A	
240-51267-2	MW-118	Total/NA	Waste	3580A	
LCS 240-183191/9-A	Lab Control Sample	Total/NA	Waste	3580A	
MB 240-183191/8-A	Method Blank	Total/NA	Waste	3580A	

#### Analysis Batch: 183390

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-51267-1	RECOVERY WELL	Total/NA	Waste	8082	183191
240-51267-2	MW-118	Total/NA	Waste	8082	183191
LCS 240-183191/9-A	Lab Control Sample	Total/NA	Waste	8082	183191
MB 240-183191/8-A	Method Blank	Total/NA	Waste	8082	183191

# Lab Chronicle

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

**Client Sample ID: RECOVERY WELL**

**Date Collected: 05/28/15 09:00**

**Date Received: 05/28/15 10:10**

**Lab Sample ID: 240-51267-1**

**Matrix: Waste**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			183191	06/01/15 13:37	DT	TAL CAN
Total/NA	Analysis	8082		5	183390	06/02/15 17:18	KMG	TAL CAN

**Client Sample ID: MW-118**

**Date Collected: 05/28/15 09:15**

**Date Received: 05/28/15 10:10**

**Lab Sample ID: 240-51267-2**

**Matrix: Waste**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			183191	06/01/15 13:37	DT	TAL CAN
Total/NA	Analysis	8082		10	183390	06/02/15 17:35	KMG	TAL CAN

## Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

# Certification Summary

Client: Brownfield Restoration Group  
Project/Site: Struktol Warehouse

TestAmerica Job ID: 240-51267-1

## Laboratory: TestAmerica Canton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-15
Florida	NELAP	4	E87225	06-30-15 *
Georgia	State Program	4	N/A	06-30-15 *
Illinois	NELAP	5	200004	07-31-15
Kansas	NELAP	7	E-10336	05-31-15 *
Kentucky (UST)	State Program	4	58	06-30-15 *
Kentucky (WW)	State Program	4	98016	12-31-15
L-A-B	DoD ELAP		L2315	07-18-16
Minnesota	NELAP	5	039-999-348	12-31-15
Nevada	State Program	9	OH-000482008A	07-31-15
New Jersey	NELAP	2	OH001	06-30-15 *
New York	NELAP	2	10975	03-31-16 *
Ohio VAP	State Program	5	CL0024	10-31-15
Oregon	NELAP	10	4062	02-23-16
Pennsylvania	NELAP	3	68-00340	08-31-15
Texas	NELAP	6		08-31-15
USDA	Federal		P330-13-00319	11-26-16
Virginia	NELAP	3	460175	09-14-15
Washington	State Program	10	C971	01-12-16
West Virginia DEP	State Program	3	210	12-31-15
Wisconsin	State Program	5	999518190	08-31-15

\* Certification renewal pending - certification considered valid.

TestAmerica Canton

## CHAIN OF CUSTODY AND RECEIVING DOCUMENTS



240-51267 Chain of Custody

[illegible]





Summit Environmental Technologies, Inc.  
3310 Win St.  
Cuyahoga Falls, Ohio 44223  
TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

March 26, 2015

Tom Shalala  
Renew Environmental, LLC  
3510 Middlehurst Street  
Norton, OH 44203  
TEL: (330) 794-7148  
FAX:

RE: Struktol Phase II

Dear Tom Shalala:

Order No.: 15031396

Summit Environmental Technologies, Inc. received 7 sample(s) on 3/16/2015 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except where noted.

If you have any questions regarding these tests results, please feel free to call the laboratory.

Sincerely,

Dr. Mo Osman

Project Manager

3310 Win St.  
Cuyahoga Falls, Ohio 44223

A2LA 0724.01, Alabama 41600, Arizona AZ0788, Arkansas 88-0735, California 07256CA, Colorado, Connecticut PH-0105, Delaware, Florida NELAC E87688, Georgia E87688 and 943, Idaho OH00923, Illinois 200061 and Reg.5, Indiana C-OH-13, Kansas E-10347, Kentucky (Underground Storage Tank) 3, Kentucky 90146, Louisiana 04061 and LA12004, Maine 2012015, Maryland 339, Massachusetts M-OPH923, Minnesota 409711, Montana CERT0099, New Hampshire 2996, New Jersey OH006, New York 11777, North Carolina 39705 and 631, Ohio Drinking Water 4170, Ohio VAP CL0052, Oklahoma 9940, Oregon OH200001, Pennsylvania 68-01335, Rhode Island LA000317, South Carolina 92016001, Tennessee TN04018, Texas T104704466-11-5, Region 8 8TMS-L, USDA/APHIS P330-11-00244, Utah OH009232011-1, Vermont VT-87688, Virginia 00440 and 1581, Washington C891, West Virginia 248 and 9957C and E87688, Wisconsin 399013010



Summit Environmental Technologies, Inc.

3310 Win St.

Cuyahoga Falls, Ohio 44223

TEL: (330) 253-8211 FAX: (330) 253-4489

Website: <http://www.settek.com>

## Workorder Sample Summary

WO#: 15031396

26-Mar-15

**CLIENT:** Renew Environmental, LLC

**Project:** Struktol Phase II

Lab SampleID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
15031396-001	SB-122 (8-10)		3/16/2015 9:14:00 AM	3/16/2015 4:25:00 PM	Solid
15031396-002	SB-123 (0-2)		3/16/2015 9:30:00 AM	3/16/2015 4:25:00 PM	Solid
15031396-003	SB-123 (8-10)		3/16/2015 9:36:00 AM	3/16/2015 4:25:00 PM	Solid
15031396-004	SB-124 (4-6)		3/16/2015 11:11:00 AM	3/16/2015 4:25:00 PM	Solid
15031396-005	SB-125 (0-2)		3/16/2015 2:00:00 AM	3/16/2015 4:25:00 PM	Solid
15031396-006	SB-126 (0-2)		3/16/2015 11:57:00 AM	3/16/2015 4:25:00 PM	Solid
15031396-007	SB-127 (6-8)		3/16/2015 2:31:00 AM	3/16/2015 4:25:00 PM	Solid





**SUMMIT**  
ENVIRONMENTAL TECHNOLOGIES, INC.  
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TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

## Case Narrative

WO#: 15031396

Date: 3/26/2015

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**CLIENT:** Renew Environmental, LLC

**Project:** Struktol Phase II

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This report in its entirety consists of the documents listed below. All documents contain the Summit Environmental Technologies, Inc., Work Order Number assigned to this report.

Paginated Report including Cover Letter, Case Narrative, Analytical Results, Applicable Quality Control Summary Reports, and copies of the Chain of Custody Documents are supplied with this sample set.

Concentrations reported with a J-Flag in the Qualifier Field are values below the Limit of Quantitation (LOQ) but greater than the established Method Detection Limit (MDL).

Method numbers, unless specified as SM (Standard Methods) or ASTM, are EPA methods.

Estimated uncertainty values are available upon request.

Analysis performed by DBM, VRM, or SG were performed at Summit Labs 2704 Eatonton Highway Haddock, GA 31033

All results for Solid Samples are reported on an "as received" or "wet weight" basis unless indicated as "dry weight" using the "-dry" designation on the reporting units.

Summit Environmental Technologies, Inc., holds the accreditations/certifications listed at the bottom of the cover letter that may or may not pertain to this report.

Any comments or problems with the analytical events associated with this report are noted below.

### Analytical Notes

· The VOC CCV exhibited marginally high recovery for Methylene Chloride (130.48%; QC Acceptance Limits: 70-130%); high recovery for Bromomethane (165.02%; Limits: 70-130%; All samples ND), Dichlorodifluoromethane (173.36%; Limits: 70-130%; All samples ND)

· Due to limited sample volume, Percent Moisture was unable to be analyzed for Sample 15031396-005 "SB-125 (0-2)."

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Original

Page 3 of 21



Summit Environmental Technologies, Inc.  
3310 Win St.  
Cuyahoga Falls, Ohio 44223  
TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

WO#: 15031396  
Date Reported: 3/26/2015  
Company: Renew Environmental, LLC  
Address: 3510 Middlehurst Street  
Norton OH 44203  
Received: 3/16/2015  
Project#: Struktol Phase II

Client ID#	Lab ID#	Collected	Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
SB-122 (8-10)	001	3/16/2015	Acenaphthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Acenaphthylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Benzo(a)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Benzo(a)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Benzo(g,h,i)perylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Benzo(k)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Benzo(b)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Chrysene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Dibenzo (a,h)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Fluorene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Indeno(1,2,3-cd)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Phenanthrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.215	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Surr: 2,4,6-Tribromophenol	55.3	%REC	Solid	EPA 8270 C	1	13-125	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Surr: 2-Fluorobiphenyl	54.7	%REC	Solid	EPA 8270 C	1	10-110	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Surr: 2-Fluorophenol	76.0	%REC	Solid	EPA 8270 C	1	14-110	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Surr: Nitrobenzene-d5	57.0	%REC	Solid	EPA 8270 C	1	11-110	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Surr: p-Terphenyl-d14	71.7	%REC	Solid	EPA 8270 C	1	14-145	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	Surr: Phenol-d6	91.2	%REC	Solid	EPA 8270 C	1	5-110	3/23/2015	JBN
SB-122 (8-10)	001	3/16/2015	1,1,1,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,1,1-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,1,2,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,1,2-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,1-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,1-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,1-Dichloropropene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,2,3-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,2,3-Trichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,2,4-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,2,4-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,2-Dibromo-3-chloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,2-Dibromoethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,2-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,2-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,3,5-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,3-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES



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Website: <http://www.settek.com>

WO#: 15031396

Date Reported: 3/26/2015

Company: Renew Environmental, LLC

Address: 3510 Middlehurst Street  
Norton OH 44203

Received: 3/16/2015

Project#: Struktol Phase II

Client ID#	Lab ID#	Collected	Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
SB-122 (8-10)	001	3/16/2015	1,3-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	1,4-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	2,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	2-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	4-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Benzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Bromobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Bromochloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Bromodichloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Bromoform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Bromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Carbon tetrachloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Chlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Chloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Chloroform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Chloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	cis-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Isopropylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Dibromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Dichlorodifluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Ethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Hexachlorobutadiene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	m,p-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0108	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Methylene chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0108	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	n-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	n-Propylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	o-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	p-Isopropyltoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	sec-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Styrene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	tert-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Tetrachloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Toluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	trans-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Trichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Trichlorofluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Vinyl chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Xylenes, Total	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00540	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Surr: 4-Bromofluorobenzene	98.2	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Surr: Dibromofluoromethane	103	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Surr: Toluene-d8	98.1	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-122 (8-10)	001	3/16/2015	Percent Moisture	7.43	%	Solid	SM 2540 B	1		3/24/2015	DHC



**SUMMIT**  
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Cuyahoga Falls, Ohio 44223  
TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

WO#: 15031396

Date Reported: 3/26/2015

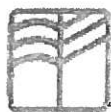
Company: Renew Environmental, LLC

Address: 3510 Middlehurst Street  
Norton OH 44203

Received: 3/16/2015

Project#: Struktol Phase II

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
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**SUMMIT**  
ENVIRONMENTAL TECHNOLOGIES, INC.  
Analytical Laboratories

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Client ID#	Lab ID#	Collected	Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
SB-123 (0-2)	002	3/16/2015	Acenaphthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Acenaphthylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Benzo(a)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Benzo(a)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Benzo(g,h,i)perylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Benzo(k)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Benzo(b)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Chrysene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Dibenzo (a,h)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Fluorene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Indeno(1,2,3-cd)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Phenanthrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Surr: 2,4,6-Tribromophenol	49.3	%REC	Solid	EPA 8270 C	1	13-125	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Surr: 2-Fluorobiphenyl	43.7	%REC	Solid	EPA 8270 C	1	10-110	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Surr: 2-Fluorophenol	60.2	%REC	Solid	EPA 8270 C	1	14-110	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Surr: Nitrobenzene-d5	47.3	%REC	Solid	EPA 8270 C	1	11-110	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Surr: p-Terphenyl-d14	62.0	%REC	Solid	EPA 8270 C	1	14-145	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	Surr: Phenol-d6	75.1	%REC	Solid	EPA 8270 C	1	5-110	3/23/2015	JBN
SB-123 (0-2)	002	3/16/2015	1,1,1,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,1,1-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,1,2,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,1,2-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,1-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,1-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,1-Dichloropropene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,2,3-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,2,3-Trichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,2,4-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,2,4-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,2-Dibromo-3-chloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,2-Dibromoethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,2-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,2-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,3,5-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,3-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES



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SB-123 (0-2)	002	3/16/2015	1,3-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	1,4-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	2,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	2-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	4-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Benzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Bromobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Bromochloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Bromodichloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Bromoform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Bromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Carbon tetrachloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Chlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Chloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Chloroform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Chloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	cis-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Isopropylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Dibromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Dichlorodifluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Ethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Hexachlorobutadiene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	m,p-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0119	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Methylene chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0179	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	n-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	n-Propylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	o-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	p-Isopropyltoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	sec-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Styrene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	tert-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Tetrachloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Toluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	trans-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Trichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Trichlorofluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Vinyl chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Xylenes, Total	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00597	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Surr: 4-Bromofluorobenzene	99.9 %REC		Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Surr: Dibromofluoromethane	102 %REC		Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Surr: Toluene-d8	101 %REC		Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-123 (0-2)	002	3/16/2015	Percent Moisture	16.2 %		Solid	SM 2540 B	1		3/24/2015	DHC



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Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
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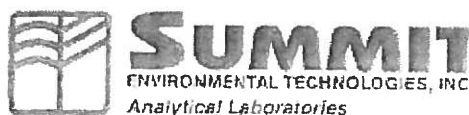


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SB-123 (8-10)	003	3/16/2015	Acenaphthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Acenaphthylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Benzo(a)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Benzo(a)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Benzo(g,h,i)perylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Benzo(k)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Benzo(b)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Chrysene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Dibenzo (a,h)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Fluorene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Indeno(1,2,3-cd)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Phenanthrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.235	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Surr: 2,4,6-Tribromophenol	60.9	%REC	Solid	EPA 8270 C	1	13-125	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Surr: 2-Fluorobiphenyl	56.9	%REC	Solid	EPA 8270 C	1	10-110	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Surr: 2-Fluorophenol	82.1	%REC	Solid	EPA 8270 C	1	14-110	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Surr: Nitrobenzene-d5	63.4	%REC	Solid	EPA 8270 C	1	11-110	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Surr: p-Terphenyl-d14	81.2	%REC	Solid	EPA 8270 C	1	14-145	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	Surr: Phenol-d6	88.3	%REC	Solid	EPA 8270 C	1	5-110	3/23/2015	JBN
SB-123 (8-10)	003	3/16/2015	1,1,1,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,1,1-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,1,2,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,1,2-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,1-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,1-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,1-Dichloropropene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,2,3-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,2,3-Trichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,2,4-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,2,4-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,2-Dibromo-3-chloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,2-Dibromoethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,2-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,2-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,3,5-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,3-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES





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WO#: 15031396

Date Reported: 3/26/2015

Company: Renew Environmental, LLC

Address: 3510 Middlehurst Street  
Norton OH 44203

Received: 3/16/2015

Project#: Struktol Phase II

Client ID#	Lab ID#	Collected	Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
SB-123 (8-10)	003	3/16/2015	1,3-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	1,4-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	2,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	2-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	4-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Benzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Bromobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Bromochloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Bromodichloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Bromoform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Bromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Carbon tetrachloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Chlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Chloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Chloroform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Chloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	cis-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Isopropylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Dibromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Dichlorodifluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Ethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Hexachlorobutadiene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	m,p-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0117	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Methylene chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0117	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	n-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	n-Propylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	o-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	p-Isopropyltoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	sec-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Styrene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	tert-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Tetrachloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Toluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	trans-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Trichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Trichlorofluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Vinyl chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Xylenes, Total	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00587	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Surr: 4-Bromofluorobenzene	97.0	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Surr: Dibromofluoromethane	107	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Surr: Toluene-d8	100	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-123 (8-10)	003	3/16/2015	Percent Moisture	14.9	%	Solid	SM 2540 B	1		3/24/2015	DHC



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Project#: Struktol Phase II

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
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Client ID#	Lab ID#	Collected	Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
SB-124 (4-6)	004	3/16/2015	Acenaphthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Acenaphthylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Benzo(a)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Benzo(a)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Benzo(g,h,i)perylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Benzo(k)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Benzo(b)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Chrysene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Dibenzo (a,h)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Fluorene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Indeno(1,2,3-cd)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Phenanthrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.239	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Surr: 2,4,6-Tribromophenol	47.1	%REC	Solid	EPA 8270 C	1	13-125	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Surr: 2-Fluorobiphenyl	53.3	%REC	Solid	EPA 8270 C	1	10-110	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Surr: 2-Fluorophenol	59.8	%REC	Solid	EPA 8270 C	1	14-110	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Surr: Nitrobenzene-d5	55.2	%REC	Solid	EPA 8270 C	1	11-110	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Surr: p-Terphenyl-d14	71.3	%REC	Solid	EPA 8270 C	1	14-145	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	Surr: Phenol-d6	71.3	%REC	Solid	EPA 8270 C	1	5-110	3/23/2015	JBN
SB-124 (4-6)	004	3/16/2015	1,1,1,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,1,1-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,1,2,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,1,2-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,1-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,1-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,1-Dichloropropene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,2,3-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,2,3-Trichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,2,4-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,2,4-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,2-Dibromo-3-chloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,2-Dibromoethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,2-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,2-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,3,5-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,3-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES



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SB-124 (4-6)	004	3/16/2015	1,3-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	1,4-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	2,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	2-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	4-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Benzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Bromobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Bromochloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Bromodichloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Bromoform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Bromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Carbon tetrachloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Chlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Chloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Chloroform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Chloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	cis-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Isopropylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Dibromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Dichlorodifluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Ethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Hexachlorobutadiene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	m,p-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0120	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Methylene chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0120	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	n-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	n-Propylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	o-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	p-Isopropyltoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	sec-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Styrene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	tert-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Tetrachloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Toluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	trans-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Trichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Trichlorofluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Vinyl chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Xylenes, Total	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00598	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Surr: 4-Bromofluorobenzene	99.2	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Surr: Dibromofluoromethane	103	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Surr: Toluene-d8	101	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-124 (4-6)	004	3/16/2015	Percent Moisture	16.4	%	Solid	SM 2540 B	1		3/24/2015	DHC



**SUMMIT**  
ENVIRONMENTAL TECHNOLOGIES, INC.  
Analytical Laboratories

Summit Environmental Technologies, Inc.  
3310 Win St.  
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TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

WO#: 15031396  
Date Reported: 3/26/2015  
Company: Renew Environmental, LLC  
Address: 3510 Middlehurst Street  
Norton OH 44203  
Received: 3/16/2015  
Project#: Struktol Phase II

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
SB-125 (0-2)	005	3/16/2015 Acenaphthene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Acenaphthylene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Anthracene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Benzo(a)anthracene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Benzo(a)pyrene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Benzo(g,h,i)perylene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Benzo(k)fluoranthene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Benzo(b)fluoranthene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Chrysene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Dibenzo (a,h)anthracene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Fluoranthene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Fluorene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Indeno(1,2,3-cd)pyrene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Naphthalene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Phenanthrene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Pyrene	ND	mg/Kg	Solid	EPA 8270 C	1	0.199	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Surr: 2,4,6-Tribromophenol	3.82	%REC	Solid	EPA 8270 C	1	13-125	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Surr: 2-Fluorobiphenyl	59.7	%REC	Solid	EPA 8270 C	1	10-110	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Surr: 2-Fluorophenol	51.2	%REC	Solid	EPA 8270 C	1	14-110	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Surr: Nitrobenzene-d5	64.5	%REC	Solid	EPA 8270 C	1	11-110	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Surr: p-Terphenyl-d14	87.0	%REC	Solid	EPA 8270 C	1	14-145	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Surr: Phenol-d6	88.3	%REC	Solid	EPA 8270 C	1	5-110	3/23/2015	JBN
SB-125 (0-2)	005	3/16/2015 Total PCBs	ND	mg/Kg	Solid	EPA 8082	1	0.400	3/23/2015	AKE
SB-125 (0-2)	005	3/16/2015 Surr: Tetrachloro-m-xylene	97.6	%REC	Solid	EPA 8082	1	5-119	3/23/2015	AKE
SB-125 (0-2)	005	3/16/2015 Surr: p-Terphenyl	79.4	%REC	Solid	EPA 8015 C	10	11-130	3/24/2015	ET
SB-125 (0-2)	005	3/16/2015 TPH(C10-C20)	176	mg/Kg	Solid	EPA 8015 C	10	167	3/24/2015	ET
SB-125 (0-2)	005	3/16/2015 TPH(C20-C34)	3980	mg/Kg	Solid	EPA 8015 C	10	500	3/24/2015	ET
SB-125 (0-2)	005	3/16/2015 TPH-GRO	ND	mg/Kg	Solid	EPA 8015 B	1	10.0	3/18/2015	JCR
SB-125 (0-2)	005	3/16/2015 Surr: FID a,a,a-TFT	109	%REC	Solid	EPA 8015 B	1	59-138	3/18/2015	JCR



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Client ID#	Lab ID#	Collected	Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
SB-126 (0-2)	006	3/16/2015	Acenaphthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Acenaphthylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Benzo(a)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Benzo(a)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Benzo(g,h,i)perylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Benzo(k)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Benzo(b)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Chrysene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Dibenzo (a,h)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Fluorene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Indeno(1,2,3-cd)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Phenanthrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.230	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Surr: 2,4,6-Tribromophenol	42.9	%REC	Solid	EPA 8270 C	1	13-125	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Surr: 2-Fluorobiphenyl	58.4	%REC	Solid	EPA 8270 C	1	10-110	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Surr: 2-Fluorophenol	74.5	%REC	Solid	EPA 8270 C	1	14-110	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Surr: Nitrobenzene-d5	60.7	%REC	Solid	EPA 8270 C	1	11-110	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Surr: p-Terphenyl-d14	79.7	%REC	Solid	EPA 8270 C	1	14-145	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Surr: Phenol-d6	83.0	%REC	Solid	EPA 8270 C	1	5-110	3/23/2015	JBN
SB-126 (0-2)	006	3/16/2015	Total PCBs	ND	mg/Kg-dry	Solid	EPA 8082	1	0.231	3/26/2015	AKE
SB-126 (0-2)	006	3/16/2015	Surr: Tetrachloro-m-xylene	74.0	%REC	Solid	EPA 8082	1	5-119	3/26/2015	AKE
SB-126 (0-2)	006	3/16/2015	Surr: p-Terphenyl	72.6	%REC	Solid	EPA 8015 C	1	11-130	3/20/2015	ET
SB-126 (0-2)	006	3/16/2015	TPH(C10-C20)	ND	mg/Kg-dry	Solid	EPA 8015 C	1	19.3	3/20/2015	ET
SB-126 (0-2)	006	3/16/2015	TPH(C20-C34)	ND	mg/Kg-dry	Solid	EPA 8015 C	1	57.8	3/20/2015	ET
SB-126 (0-2)	006	3/16/2015	TPH-GRO	ND	mg/Kg-dry	Solid	EPA 8015 B	1	11.6	3/18/2015	JCR
SB-126 (0-2)	006	3/16/2015	Surr: FID a,a,a-TFT	108	%REC	Solid	EPA 8015 B	1	59-138	3/18/2015	JCR
SB-126 (0-2)	006	3/16/2015	1,1,1,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,1,1-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,1,2,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,1,2-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,1-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,1-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,1-Dichloropropene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES





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SB-126 (0-2)	006	3/16/2015	1,2,3-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,2,3-Trichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,2,4-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,2,4-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,2-Dibromo-3-chloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,2-Dibromoethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,2-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,2-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,3,5-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,3-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,3-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	1,4-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	2,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	2-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	4-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Benzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Bromobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Bromochloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Bromodichloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Bromoform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Bromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Carbon tetrachloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Chlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Chloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Chloroform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Chloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	cis-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Isopropylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Dibromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Dichlorodifluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Ethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Hexachlorobutadiene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	m,p-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0116	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Methylene chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0116	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	n-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	n-Propylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	o-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	p-Isopropyltoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	sec-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Styrene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	tert-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Tetrachloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Toluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES



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SB-126 (0-2)	006	3/16/2015	trans-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Trichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Trichlorofluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Vinyl chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Xylenes, Total	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00578	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Surr: 4-Bromofluorobenzene	99.5	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Surr: Dibromofluoromethane	108	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Surr: Toluene-d8	103	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-126 (0-2)	006	3/16/2015	Percent Moisture	13.5	%	Solid	SM 2540 B	1		3/24/2015	DHC



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Project#: Struktol Phase II

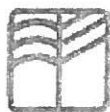
Client ID#	Lab ID#	Collected	Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
SB-127 (6-8)	007	3/16/2015	Acenaphthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Acenaphthylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Benzo(a)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Benzo(a)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Benzo(g,h,i)perylene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Benzo(k)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Benzo(b)fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Chrysene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Dibenzo (a,h)anthracene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Fluoranthene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Fluorene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Indeno(1,2,3-cd)pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Phenanthrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Pyrene	ND	mg/Kg-dry	Solid	EPA 8270 C	1	0.274	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Surr: 2,4,6-Tribromophenol	60.0	%REC	Solid	EPA 8270 C	1	13-125	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Surr: 2-Fluorobiphenyl	58.4	%REC	Solid	EPA 8270 C	1	10-110	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Surr: 2-Fluorophenol	87.1	%REC	Solid	EPA 8270 C	1	14-110	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Surr: Nitrobenzene-d5	64.3	%REC	Solid	EPA 8270 C	1	11-110	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Surr: p-Terphenyl-d14	83.4	%REC	Solid	EPA 8270 C	1	14-145	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Surr: Phenol-d6	92.0	%REC	Solid	EPA 8270 C	1	5-110	3/23/2015	JBN
SB-127 (6-8)	007	3/16/2015	Total PCBs	ND	mg/Kg-dry	Solid	EPA 8082	1	0.276	3/26/2015	AKE
SB-127 (6-8)	007	3/16/2015	Surr: Tetrachloro-m-xylene	75.0	%REC	Solid	EPA 8082	1	5-119	3/26/2015	AKE
SB-127 (6-8)	007	3/16/2015	Surr: p-Terphenyl	86.4	%REC	Solid	EPA 8015 C	1	11-130	3/20/2015	ET
SB-127 (6-8)	007	3/16/2015	TPH(C10-C20)	ND	mg/Kg-dry	Solid	EPA 8015 C	1	23.0	3/20/2015	ET
SB-127 (6-8)	007	3/16/2015	TPH(C20-C34)	ND	mg/Kg-dry	Solid	EPA 8015 C	1	68.9	3/20/2015	ET
SB-127 (6-8)	007	3/16/2015	TPH-GRO	ND	mg/Kg-dry	Solid	EPA 8015 B	1	13.8	3/18/2015	JCR
SB-127 (6-8)	007	3/16/2015	Surr: FID a,a,a-TFT	102	%REC	Solid	EPA 8015 B	1	59-138	3/18/2015	JCR
SB-127 (6-8)	007	3/16/2015	1,1,1,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,1,1-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,1,2,2-Tetrachloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,1,2-Trichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,1-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,1-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,1-Dichloropropene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES



Summit Environmental Technologies, Inc.  
3310 Win St.  
Cuyahoga Falls, Ohio 44223  
TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

WO#: 15031396  
Date Reported: 3/26/2015  
Company: Renew Environmental, LLC  
Address: 3510 Middlehurst Street  
Norton OH 44203  
Received: 3/16/2015  
Project#: Struktol Phase II

Client ID#	Lab ID#	Collected	Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
SB-127 (6-8)	007	3/16/2015	1,2,3-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,2,3-Trichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,2,4-Trichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,2,4-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,2-Dibromo-3-chloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,2-Dibromoethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,2-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,2-Dichloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,3,5-Trimethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,3-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,3-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	1,4-Dichlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	2,2-Dichloropropane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	2-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	4-Chlorotoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Benzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Bromobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Bromochloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Bromodichloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Bromoform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Bromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Carbon tetrachloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Chlorobenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Chloroethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Chloroform	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Chloromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	cis-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Isopropylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Dibromomethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Dichlorodifluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Ethylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Hexachlorobutadiene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	m,p-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0138	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Methylene chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.0138	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	n-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	n-Propylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Naphthalene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	o-Xylene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	p-Isopropyltoluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	sec-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Styrene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	tert-Butylbenzene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Tetrachloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015	Toluene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES



**SUMMIT**  
ENVIRONMENTAL TECHNOLOGIES, INC.  
Analytical Laboratories

Summit Environmental Technologies, Inc.  
3310 Win St.  
Cuyahoga Falls, Ohio 44223  
TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

WO#: 15031396

Date Reported: 3/26/2015

Company: Renew Environmental, LLC

Address: 3510 Middlehurst Street  
Norton OH 44203

Received: 3/16/2015

Project#: Struktol Phase II

Client ID#	Lab ID#	Collected Analyte	Result	Units	Matrix	Method	DF	RL	Run	Analyst
SB-127 (6-8)	007	3/16/2015 trans-1,2-Dichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015 Trichloroethene	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015 Trichlorofluoromethane	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015 Vinyl chloride	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015 Xylenes, Total	ND	mg/Kg-dry	Solid	EPA 8260 B	1	0.00689	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015 Surr: 4-Bromofluorobenzene	98.3	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015 Surr: Dibromofluoromethane	108	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015 Surr: Toluene-d8	102	%REC	Solid	EPA 8260 B	1	70-130	3/18/2015	MES
SB-127 (6-8)	007	3/16/2015 Percent Moisture	27.5	%	Solid	SM 2540 B	1		3/24/2015	DHC

105484

Summit Environmental Technologies, Inc.  
Cooler Receipt Form

Client: Renew Initials of person inspecting cooler and samples: SC  
Order Number: 15031396  
Date Received: 3-16-15 Time Received: 1625 Date cooler(s) opened and samples inspected: 3-16  
Number of Coolers/Boxes: 1  
Shipper: FED EX UPS DHL Airborne US Postal Walk-in Pickup Other  
Packaging: Peanuts Bubble Wrap Paper Foam None Other  
Tape on cooler/box: Y N N/A  
Custody Seals intact: Y N N/A  
C-O-C in plastic: Y N N/A  
Ice: Blue ice present / absent / melted N/A  
Sample Temperature: IR Gun #16020459 CF0 0 °C 5.0 °C N/A  
Radiological Testing Instrument serial #35127 Y N N/A  
(see page 2 for scan results)  
\*\*Use 1 sheet per sample for Radiological Testing. If sample is HOT, the Radiological Safety Officer must be notified immediately.  
C-O-C filled out properly: Y N N/A  
Samples in separate bags: Y N N/A  
Sample containers intact\*: Y N N/A  
\*If nc, list broken sample(s): \_\_\_\_\_  
Sample label(s) complete (ID, date, etc.): Y N N/A  
Label(s) agree with C-O-C: Y N N/A  
Correct containers used: Y N N/A  
Sufficient sample received: Y N N/A  
Bubbles absent from 40 mL vials\*\*: Y N N/A  
\*\* Samples with bubbles <6mm are acceptable. Indicate bubble size if >6mm. \_\_\_\_\_  
Was client contacted about samples: Y N  
Will client send new samples: Y N  
Client contact: \_\_\_\_\_  
Date/Time: \_\_\_\_\_  
Logged in by: \_\_\_\_\_  
Comments: \_\_\_\_\_





## **APPENDIX D**

### **LABORATORY ANALYTAL REPORT FOR GROUNDWATER SAMPLES**



Summit Environmental Technologies, Inc.  
3310 Win St.  
Cuyahoga Falls, Ohio 44223  
TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

April 01, 2015

Tom Shalala  
Renew Environmental, LLC  
3510 Middlehurst Street  
Norton, OH 44203  
TEL: (330) 794-7148  
FAX:

RE: Struktol Phase II

Dear Tom Shalala:

Order No.: 15031930

Summit Environmental Technologies, Inc. received 8 sample(s) on 3/20/2015 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except where noted.

If you have any questions regarding these tests results, please feel free to call the laboratory.

Sincerely,

Dr. Mo Osman

Project Manager

3310 Win St.  
Cuyahoga Falls, Ohio 44223

A2LA 0724.01, Alabama 41600, Arizona AZ0788, Arkansas 88-0735, California 07256CA, Colorado, Connecticut PH-0105, Delaware, Florida NELAC E87688, Georgia E87688 and 943, Idaho OH00923, Illinois 200061 and Reg.5, Indiana C-OH-13, Kansas E-10347, Kentucky (Underground Storage Tank) 3, Kentucky 90146, Louisiana 04061 and LA12004, Maine 2012015, Maryland 339, Massachusetts M-OPH923, Minnesota 409711, Montana CERT0099, New Hampshire 2996, New Jersey OH006, New York 11777, North Carolina 39705 and 631, Ohio Drinking Water 4170, Ohio VAP CL0052, Oklahoma 9940, Oregon OH200001, Pennsylvania 68-01335, Rhode Island LA000317, South Carolina 92016001, Tennessee TN04018, Texas T104704466-11-5, Region 8 8TMS-L, USDA/APHIS P330-11-00244, Utah OH009232011-1, Vermont VT-87688, Virginia 00440 and 1581, Washington C891, West Virginia 248 and 9957C and E87688, Wisconsin 399013010



Summit Environmental Technologies, Inc.

3310 Win St.

Cuyahoga Falls, Ohio 44223

TEL: (330) 253-8211 FAX: (330) 253-4489

Website: <http://www.settek.com>

## Workorder Sample Summary

WO#: 15031930

01-Apr-15

**CLIENT:** Renew Environmental, LLC

**Project:** Struktol Phase II

Lab SampleID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
15031930-001	MW-122		3/20/2015 12:11:00 PM	3/20/2015 3:03:00 PM	Non-Potable Water
15031930-002	MW-123		3/20/2015 12:25:00 PM	3/20/2015 3:03:00 PM	Non-Potable Water
15031930-003	MW-126		3/20/2015 12:50:00 PM	3/20/2015 3:03:00 PM	Non-Potable Water
15031930-004	MW-127		3/20/2015 1:10:00 PM	3/20/2015 3:03:00 PM	Non-Potable Water
15031930-005	MW-128		3/20/2015 1:30:00 PM	3/20/2015 3:03:00 PM	Non-Potable Water
15031930-006	MW-129		3/20/2015 1:45:00 PM	3/20/2015 3:03:00 PM	Non-Potable Water
15031930-007	Dup-2		3/20/2015	3/20/2015 3:03:00 PM	Non-Potable Water
15031930-008	Trip Blank			3/20/2015 3:03:00 PM	Non-Potable Water



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Website: <http://www.settek.com>

## Case Narrative

WO#: 15031930

Date: 4/1/2015

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**CLIENT:** Renew Environmental, LLC

**Project:** Struktol Phase II

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This report in its entirety consists of the documents listed below. All documents contain the Summit Environmental Technologies, Inc., Work Order Number assigned to this report.

Paginated Report including Cover Letter, Case Narrative, Analytical Results, Applicable Quality Control Summary Reports, and copies of the Chain of Custody Documents are supplied with this sample set.

Concentrations reported with a J-Flag in the Qualifier Field are values below the Limit of Quantitation (LOQ) but greater than the established Method Detection Limit (MDL).

Method numbers, unless specified as SM (Standard Methods) or ASTM, are EPA methods.

Estimated uncertainty values are available upon request.

Analysis performed by DBM, VRM, or SG were performed at Summit Labs 2704 Eatonton Highway Haddock, GA 31033

All results for Solid Samples are reported on an "as received" or "wet weight" basis unless indicated as "dry weight" using the "-dry" designation on the reporting units.

Summit Environmental Technologies, Inc., holds the accreditations/certifications listed at the bottom of the cover letter that may or may not pertain to this report.

Any comments or problems with the analytical events associated with this report are noted below. Analytical Comments for VOC-mstr\_NPW(8260), Sample 15031930-002AMS, Batch ID R34354 : MS and/or MSD outside accepted recovery limits-possibly due to matrix effect. LCS/LCSD are within accepted limits.

Analytical Comments for VOC-mstr\_NPW(8260), Sample CCV MM032315/GS0, Batch ID R34354 : CCV has compound(s) above recovery limits. There are no hits for those particular compound(s) in the samples.

Analytical Comments for SVOC-Mstr\_NPW(8270), Sample CCV(1)40, Batch ID R34800 : The SVOC CCV(1) (Batch R34800) exhibited marginally high recovery for Hexachlorocyclopentadiene.

Analytical Comments for SVOC-Mstr\_NPW(8270), Sample CCV(2)40, Batch ID R34800 : The SVOC CCV(2) (Batch R34800) exhibited marginally high recoveries for 1,2-Diphenylhydrazine, 4-

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Original

Page 3 of 38



**SUMMIT**  
ENVIRONMENTAL TECHNOLOGIES, INC.  
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## Case Narrative

WO#: 15031930  
Date: 4/1/2015

---

**CLIENT:** Renew Environmental, LLC

**Project:** Struktol Phase II

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Nitroaniline, and N-Nitrosodimethylamine.



**SUMMIT**  
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3310 Win St.  
Cuyahoga Falls, Ohio 44223  
TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-001A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-122

**Tag Number:**

**Collection Date:** 3/20/2015 12:11:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>						
		<b>SW8270C</b>	<b>SW3510C</b>	<b>Analyst: AKE</b>		
1,2,4-Trichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
1,2-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
1,2-Diphenylhydrazine	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
1,3-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
1,4-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
2,4,6-Trichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
2,4-Dichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
2,4-Dimethylphenol	ND	0.01200	U	mg/L	1	3/31/2015 7:51:00 PM
2,4-Dinitrophenol	ND	0.01200	U	mg/L	1	3/31/2015 7:51:00 PM
2,4-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
2,6-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
2-Chloronaphthalene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
2-Chlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
2-Nitrophenol	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
3,3'-Dichlorobenzidine	ND	0.01600	U	mg/L	1	3/31/2015 7:51:00 PM
4,6-Dinitro-o-cresol	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
4-Bromophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
4-Chlorophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
4-Nitrophenol	ND	0.01200	U	mg/L	1	3/31/2015 7:51:00 PM
Acenaphthene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Acenaphthylene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Anthracene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Benzidine	ND	0.01400	U	mg/L	1	3/31/2015 7:51:00 PM
Benzo(a)anthracene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Benzo(a)pyrene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Benzo(g,h,i)perylene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Benzo(k)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Benzo(b)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Bis(2-chloroethoxy)methane	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Bis(2-chloroethyl) ether	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Bis(2-chloroisopropyl) ether	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Bis(2-ethylhexyl) phthalate	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Butyl benzyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Chrysene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

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Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-001A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-122

**Tag Number:**  
**Collection Date:** 3/20/2015 12:11:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>						
		<b>SW8270C</b>	<b>SW3510C</b>	Analyst: AKE		
Di-n-butyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Di-n-octyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Dibenzo (a,h) anthracene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Diethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Dimethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Fluorene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Hexachlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Hexachlorobutadiene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Hexachlorocyclopentadiene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Hexachloroethane	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Indeno(1,2,3-cd)pyrene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Isophorone	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
N-Nitrosodi-n-propylamine	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
N-Nitrosodimethylamine	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
N-Nitrosodiphenylamine	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Naphthalene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Nitrobenzene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
p-Chloro-m-cresol	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Pentachlorophenol	ND	0.01200	U	mg/L	1	3/31/2015 7:51:00 PM
Phenanthrene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Phenol	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Pyrene	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
m&p-Cresol	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Dibenzofuran	ND	0.004000	U	mg/L	1	3/31/2015 7:51:00 PM
Cresols, Total	ND	0.05000	U	mg/L	1	3/31/2015 7:51:00 PM
Surr: 2-Fluorophenol	45.0	14 - 110		%REC	1	3/31/2015 7:51:00 PM
Surr: Phenol-d6	38.4	5 - 110		%REC	1	3/31/2015 7:51:00 PM
Surr: Nitrobenzene-d5	78.1	11 - 110		%REC	1	3/31/2015 7:51:00 PM
Surr: 2,4,6-Tribromophenol	56.0	13 - 125		%REC	1	3/31/2015 7:51:00 PM
Surr: 2-Fluorobiphenyl	73.2	10 - 110		%REC	1	3/31/2015 7:51:00 PM
Surr: p-Terphenyl-d14	70.5	14 - 135		%REC	1	3/31/2015 7:51:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
- N Tentatively identified compounds
- O RSD is greater than RSDlimit
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- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-001A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-122

**Tag Number:**  
**Collection Date:** 3/20/2015 12:11:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>PCB-LIQUID-8082</b>						
<b>SVOC PCB (8082) 7-AROCHLORS</b>					SW8082 SW3510C	Analyst: AKE
Aroclor 1016	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1221	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1232	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1242	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1248	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1254	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1260	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1268	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Surr: Tetrachloro-m-xylene	67.0	5 - 119		%REC	1	4/1/2015 11:03:00 AM
<b>VOLATILE ORGANIC COMPOUNDS (SW8260)</b>						
<b>VOC BY GC/MS (8260)</b>					SW8260B	Analyst: MES
1,1,1,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,1,1-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,1,2,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,1,2-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,1-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,1-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,1-Dichloropropene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,2,3-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,2,3-Trichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Benzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Toluene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Ethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Isopropylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,2,4-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Naphthalene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,2,4-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
DBCP	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,2-Dibromoethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,2-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,2-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
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Original

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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015 12:11:00 PM

**Lab ID:** 15031930-001A

**Project:** Struktol Phase II

**Client Sample ID** MW-122

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)		SW8260B				Analyst: MES
VOC BY GC/MS (8260)						
1,3,5-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,3-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,3-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
1,4-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
2,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
2-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
4-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Bromobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Bromochloromethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Bromodichloromethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Bromoform	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Bromomethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Carbon tetrachloride	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Chlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Chloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Chloroform	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Chloromethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
cis-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Dibromomethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Dichlorodifluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Hexachlorobutadiene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
m,p-Xylene	ND	0.0100	U	mg/L	1	3/23/2015 1:06:00 PM
Methylene chloride	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
n-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
n-Propylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
o-Xylene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
p-Isopropyltoluene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
sec-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Styrene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
tert-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Tetrachloroethene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
trans-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Trichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM
Trichlorofluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 1:06:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

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Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015 12:11:00 PM

**Lab ID:** 15031930-001A

**Project:** Struktol Phase II

**Client Sample ID** MW-122

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B	Analyst: MES	
VOC BY GC/MS (8260)						
Vinyl chloride	ND	0.00200	U	mg/L	1	3/23/2015 1:06:00 PM
Surr: 4-Bromofluorobenzene	96.7	70 - 130		%REC	1	3/23/2015 1:06:00 PM
Surr: Dibromofluoromethane	101	70 - 130		%REC	1	3/23/2015 1:06:00 PM
Surr: Toluene-d8	97.8	70 - 130		%REC	1	3/23/2015 1:06:00 PM

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
M Manual Integration used to determine area response  
ND Not Detected at the Reporting Limit  
P Second column confirmation exceeds  
R RPD outside accepted recovery limits  
U Samples with CalcVal < MDL

C Value is below Minimum Compound Limit.  
H Holding times for preparation or analysis exceeded  
N Tentatively identified compounds  
O RSD is greater than RSDlimit  
PL Permit Limit  
RL Reporting Detection Limit  
J Analyte detected below quantitation limits

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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015 12:25:00 PM

**Lab ID:** 15031930-002A

**Project:** Struktol Phase II

**Client Sample ID** MW-123

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>						
		<b>SW8270C</b>	<b>SW3510C</b>	<b>Analyst: AKE</b>		
1,2,4-Trichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015
1,2-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015
1,2-Diphenylhydrazine	ND	0.004000	U	mg/L	1	3/31/2015
1,3-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015
1,4-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015
2,4,6-Trichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015
2,4-Dichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015
2,4-Dimethylphenol	ND	0.01200	U	mg/L	1	3/31/2015
2,4-Dinitrophenol	ND	0.01200	U	mg/L	1	3/31/2015
2,4-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015
2,6-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015
2-Chloronaphthalene	ND	0.004000	U	mg/L	1	3/31/2015
2-Chlorophenol	ND	0.004000	U	mg/L	1	3/31/2015
2-Nitrophenol	ND	0.004000	U	mg/L	1	3/31/2015
3,3'-Dichlorobenzidine	ND	0.01600	U	mg/L	1	3/31/2015
4,6-Dinitro-o-cresol	ND	0.004000	U	mg/L	1	3/31/2015
4-Bromophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015
4-Chlorophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015
4-Nitrophenol	ND	0.01200	U	mg/L	1	3/31/2015
Acenaphthene	ND	0.004000	U	mg/L	1	3/31/2015
Acenaphthylene	ND	0.004000	U	mg/L	1	3/31/2015
Anthracene	ND	0.004000	U	mg/L	1	3/31/2015
Benzidine	ND	0.01400	U	mg/L	1	3/31/2015
Benzo(a)anthracene	ND	0.004000	U	mg/L	1	3/31/2015
Benzo(a)pyrene	ND	0.004000	U	mg/L	1	3/31/2015
Benzo(g,h,i)perylene	ND	0.004000	U	mg/L	1	3/31/2015
Benzo(k)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015
Benzo(b)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015
Bis(2-chloroethoxy)methane	ND	0.004000	U	mg/L	1	3/31/2015
Bis(2-chloroethyl) ether	ND	0.004000	U	mg/L	1	3/31/2015
Bis(2-chloroisopropyl) ether	ND	0.004000	U	mg/L	1	3/31/2015
Bis(2-ethylhexyl) phthalate	0.006380	0.004000		mg/L	1	3/31/2015
Butyl benzyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015
Chrysene	ND	0.004000	U	mg/L	1	3/31/2015

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

Original



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Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-002A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-123

**Tag Number:**  
**Collection Date:** 3/20/2015 12:25:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>					SW8270C	SW3510C
					Analyst: AKE	
Di-n-butyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015
Di-n-octyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015
Dibenzo (a,h) anthracene	ND	0.004000	U	mg/L	1	3/31/2015
Diethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015
Dimethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015
Fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015
Fluorene	ND	0.004000	U	mg/L	1	3/31/2015
Hexachlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015
Hexachlorobutadiene	ND	0.004000	U	mg/L	1	3/31/2015
Hexachlorocyclopentadiene	ND	0.004000	U	mg/L	1	3/31/2015
Hexachloroethane	ND	0.004000	U	mg/L	1	3/31/2015
Indeno(1,2,3-cd)pyrene	ND	0.004000	U	mg/L	1	3/31/2015
Isophorone	ND	0.004000	U	mg/L	1	3/31/2015
N-Nitrosodi-n-propylamine	ND	0.004000	U	mg/L	1	3/31/2015
N-Nitrosodimethylamine	ND	0.004000	U	mg/L	1	3/31/2015
N-Nitrosodiphenylamine	ND	0.004000	U	mg/L	1	3/31/2015
Naphthalene	ND	0.004000	U	mg/L	1	3/31/2015
Nitrobenzene	ND	0.004000	U	mg/L	1	3/31/2015
p-Chloro-m-cresol	ND	0.004000	U	mg/L	1	3/31/2015
Pentachlorophenol	ND	0.01200	U	mg/L	1	3/31/2015
Phenanthrene	ND	0.004000	U	mg/L	1	3/31/2015
Phenol	ND	0.004000	U	mg/L	1	3/31/2015
Pyrene	ND	0.004000	U	mg/L	1	3/31/2015
m&p-Cresol	ND	0.004000	U	mg/L	1	3/31/2015
Dibenzofuran	ND	0.004000	U	mg/L	1	3/31/2015
Cresols, Total	ND	0.05000	U	mg/L	1	3/31/2015
Surr: 2-Fluorophenol	48.8	14 - 110		%REC	1	3/31/2015
Surr: Phenol-d6	34.8	5 - 110		%REC	1	3/31/2015
Surr: Nitrobenzene-d5	87.3	11 - 110		%REC	1	3/31/2015
Surr: 2,4,6-Tribromophenol	59.4	13 - 125		%REC	1	3/31/2015
Surr: 2-Fluorobiphenyl	80.7	10 - 110		%REC	1	3/31/2015
Surr: p-Terphenyl-d14	81.4	14 - 135		%REC	1	3/31/2015

**Qualifiers:**

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- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
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Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-002A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-123

**Tag Number:**  
**Collection Date:** 3/20/2015 12:25:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>PCB-LIQUID-8082</b>						
					<b>SW8082</b>	<b>SW3510C</b>
<b>SVOC PCB (8082) 7-AROCHLORS</b>					Analyst: AKE	
Aroclor 1016	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1221	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1232	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1242	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1248	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1254	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1260	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Aroclor 1268	ND	0.000200	U	mg/L	1	4/1/2015 11:03:00 AM
Surr: Tetrachloro-m-xylene	67.0	5 - 119		%REC	1	4/1/2015 11:03:00 AM
<b>VOLATILE ORGANIC COMPOUNDS (SW8260)</b>						
<b>VOC BY GC/MS (8260)</b>					<b>SW8260B</b>	Analyst: MES
1,1,1,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,1,1-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,1,2,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,1,2-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,1-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,1-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,1-Dichloropropene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,2,3-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,2,3-Trichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Benzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Toluene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Ethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Isopropylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,2,4-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Naphthalene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,2,4-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
DBCP	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,2-Dibromoethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,2-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,2-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM

**Qualifiers:**

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- ND Not Detected at the Reporting Limit
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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-002A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-123

**Tag Number:**  
**Collection Date:** 3/20/2015 12:25:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B		Analyst: MES
VOC BY GC/MS (8260)						
1,3,5-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,3-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,3-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
1,4-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
2,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
2-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
4-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Bromobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Bromochloromethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Bromodichloromethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Bromoform	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Bromomethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Carbon tetrachloride	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Chlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Chloroethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Chloroform	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Chloromethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
cis-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Dibromomethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Dichlorodifluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Hexachlorobutadiene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
m,p-Xylene	ND	0.0100	U	mg/L	1	3/23/2015 1:41:00 PM
Methylene chloride	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
n-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
n-Propylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
o-Xylene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
p-Isopropyltoluene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
sec-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Styrene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
tert-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Tetrachloroethene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
trans-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Trichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM
Trichlorofluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 1:41:00 PM

**Qualifiers:**

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- P Second column confirmation exceeds
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- U Samples with CalcVal < MDL

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- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

Original





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Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-002A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-123

**Tag Number:**  
**Collection Date:** 3/20/2015 12:25:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B	Analyst: MES	
VOC BY GC/MS (8260)						
Vinyl chloride	ND	0.00200	U	mg/L	1	3/23/2015 1:41:00 PM
Surr: 4-Bromofluorobenzene	93.1	70 - 130		%REC	1	3/23/2015 1:41:00 PM
Surr: Dibromofluoromethane	101	70 - 130		%REC	1	3/23/2015 1:41:00 PM
Surr: Toluene-d8	95.6	70 - 130		%REC	1	3/23/2015 1:41:00 PM

**Qualifiers:**

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- P Second column confirmation exceeds
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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-003A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-126

**Tag Number:**  
**Collection Date:** 3/20/2015 12:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>						
		<b>SW8270C</b>	<b>SW3510C</b>	<b>Analyst: AKE</b>		
1,2,4-Trichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
1,2-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
1,2-Diphenylhydrazine	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
1,3-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
1,4-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
2,4,6-Trichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
2,4-Dichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
2,4-Dimethylphenol	ND	0.01200	U	mg/L	1	3/31/2015 8:24:00 PM
2,4-Dinitrophenol	ND	0.01200	U	mg/L	1	3/31/2015 8:24:00 PM
2,4-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
2,6-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
2-Chloronaphthalene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
2-Chlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
2-Nitrophenol	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
3,3'-Dichlorobenzidine	ND	0.01600	U	mg/L	1	3/31/2015 8:24:00 PM
4,6-Dinitro-o-cresol	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
4-Bromophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
4-Chlorophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
4-Nitrophenol	ND	0.01200	U	mg/L	1	3/31/2015 8:24:00 PM
Acenaphthene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Acenaphthylene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Anthracene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Benzdine	ND	0.01400	U	mg/L	1	3/31/2015 8:24:00 PM
Benzo(a)anthracene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Benzo(a)pyrene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Benzo(g,h,i)perylene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Benzo(k)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Benzo(b)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Bis(2-chloroethoxy)methane	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Bis(2-chloroethyl) ether	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Bis(2-chloroisopropyl) ether	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Bis(2-ethylhexyl) phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Butyl benzyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Chrysene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-003A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-126

**Tag Number:**  
**Collection Date:** 3/20/2015 12:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>					SW8270C	SW3510C Analyst: AKE
Di-n-butyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Di-n-octyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Dibenzo (a,h) anthracene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Diethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Dimethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Fluorene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Hexachlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Hexachlorobutadiene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Hexachlorocyclopentadiene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Hexachloroethane	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Indeno(1,2,3-cd)pyrene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Isophorone	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
N-Nitrosodi-n-propylamine	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
N-Nitrosodimethylamine	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
N-Nitrosodiphenylamine	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Naphthalene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Nitrobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
p-Chloro-m-cresol	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Pentachlorophenol	ND	0.01200	U	mg/L	1	3/31/2015 8:24:00 PM
Phenanthrene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Phenol	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Pyrene	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
m&p-Cresol	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Dibenzofuran	ND	0.004000	U	mg/L	1	3/31/2015 8:24:00 PM
Cresols, Total	ND	0.05000	U	mg/L	1	3/31/2015 8:24:00 PM
Surr: 2-Fluorophenol	47.8	14 - 110		%REC	1	3/31/2015 8:24:00 PM
Surr: Phenol-d6	38.0	5 - 110		%REC	1	3/31/2015 8:24:00 PM
Surr: Nitrobenzene-d5	80.5	11 - 110		%REC	1	3/31/2015 8:24:00 PM
Surr: 2,4,6-Tribromophenol	55.3	13 - 125		%REC	1	3/31/2015 8:24:00 PM
Surr: 2-Fluorobiphenyl	69.3	10 - 110		%REC	1	3/31/2015 8:24:00 PM
Surr: p-Terphenyl-d14	62.1	14 - 135		%REC	1	3/31/2015 8:24:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

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TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

# Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-003A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-126

**Tag Number:**  
**Collection Date:** 3/20/2015 12:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>PCB-LIQUID-8082</b>						
					<b>SW8082</b>	<b>SW3510C</b>
<b>SVOC PCB (8082) 7-AROCHLORS</b>					Analyst: AKE	
Aroclor 1016	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1221	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1232	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1242	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1248	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1254	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1260	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1268	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Surr: Tetrachloro-m-xylene	81.0	5 - 119		%REC	1	4/1/2015 11:18:00 AM
<b>VOLATILE ORGANIC COMPOUNDS (SW8260)</b>						
<b>VOC BY GC/MS (8260)</b>					<b>SW8260B</b>	Analyst: MES
1,1,1,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,1,1-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,1,2,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,1,2-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,1-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,1-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,1-Dichloropropene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,2,3-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,2,3-Trichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Benzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Toluene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Ethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Isopropylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,2,4-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Naphthalene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,2,4-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
DBCP	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,2-Dibromoethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,2-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,2-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM

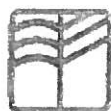
**Qualifiers:**

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- E Value above quantitation range
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- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015 12:50:00 PM

**Lab ID:** 15031930-003A

**Project:** Struktol Phase II

**Client Sample ID** MW-126

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B		Analyst: MES
VOC BY GC/MS (8260)						
1,3,5-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,3-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,3-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
1,4-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
2,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
2-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
4-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Bromobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Bromochloromethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Bromodichloromethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Bromoform	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Bromomethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Carbon tetrachloride	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Chlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Chloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Chloroform	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Chloromethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
cis-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Dibromomethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Dichlorodifluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Hexachlorobutadiene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
m,p-Xylene	ND	0.0100	U	mg/L	1	3/23/2015 2:15:00 PM
Methylene chloride	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
n-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
n-Propylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
o-Xylene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
p-Isopropyltoluene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
sec-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Styrene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
tert-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Tetrachloroethene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
trans-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Trichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM
Trichlorofluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 2:15:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
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- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015 12:50:00 PM

**Lab ID:** 15031930-003A

**Project:** Struktol Phase II

**Client Sample ID** MW-126

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B		Analyst: MES
VOC BY GC/MS (8260)						
Vinyl chloride	ND	0.00200	U	mg/L	1	3/23/2015 2:15:00 PM
Surr: 4-Bromofluorobenzene	92.2	70 - 130		%REC	1	3/23/2015 2:15:00 PM
Surr: Dibromofluoromethane	98.3	70 - 130		%REC	1	3/23/2015 2:15:00 PM
Surr: Toluene-d8	96.6	70 - 130		%REC	1	3/23/2015 2:15:00 PM

### Qualifiers:

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# Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

CLIENT: Renew Environmental, LLC

Tag Number:

Matrix: NON-POTABLE WATER

Collection Date: 3/20/2015 1:10:00 PM

Lab ID: 15031930-004A

Project: Struktol Phase II

Client Sample ID MW-127

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>					SW8270C	SW3510C Analyst: AKE
1,2,4-Trichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
1,2-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
1,2-Diphenylhydrazine	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
1,3-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
1,4-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
2,4,6-Trichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
2,4-Dichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
2,4-Dimethylphenol	ND	0.01200	U	mg/L	1	3/31/2015 8:55:00 PM
2,4-Dinitrophenol	ND	0.01200	U	mg/L	1	3/31/2015 8:55:00 PM
2,4-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
2,6-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
2-Chloronaphthalene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
2-Chlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
2-Nitrophenol	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
3,3'-Dichlorobenzidine	ND	0.01600	U	mg/L	1	3/31/2015 8:55:00 PM
4,6-Dinitro-o-cresol	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
4-Bromophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
4-Chlorophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
4-Nitrophenol	ND	0.01200	U	mg/L	1	3/31/2015 8:55:00 PM
Acenaphthene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Acenaphthylene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Anthracene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Benzidine	ND	0.01400	U	mg/L	1	3/31/2015 8:55:00 PM
Benzo(a)anthracene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Benzo(a)pyrene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Benzo(g,h,i)perylene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Benzo(k)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Benzo(b)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Bis(2-chloroethoxy)methane	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Bis(2-chloroethyl) ether	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Bis(2-chloroisopropyl) ether	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Bis(2-ethylhexyl) phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Butyl benzyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Chrysene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-004A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-127

**Tag Number:**  
**Collection Date:** 3/20/2015 1:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>				<b>SW8270C</b>	<b>SW3510C</b>	<b>Analyst: AKE</b>
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>						
Di-n-butyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Di-n-octyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Dibenzo (a,h) anthracene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Diethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Dimethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Fluorene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Hexachlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Hexachlorobutadiene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Hexachlorocyclopentadiene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Hexachloroethane	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Indeno(1,2,3-cd)pyrene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Isophorone	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
N-Nitrosodi-n-propylamine	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
N-Nitrosodimethylamine	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
N-Nitrosodiphenylamine	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Naphthalene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Nitrobenzene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
p-Chloro-m-cresol	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Pentachlorophenol	ND	0.01200	U	mg/L	1	3/31/2015 8:55:00 PM
Phenanthrene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Phenol	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Pyrene	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
m&p-Cresol	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Dibenzofuran	ND	0.004000	U	mg/L	1	3/31/2015 8:55:00 PM
Cresols, Total	ND	0.05000	U	mg/L	1	3/31/2015 8:55:00 PM
Surr: 2-Fluorophenol	49.7	14 - 110		%REC	1	3/31/2015 8:55:00 PM
Surr: Phenol-d6	41.6	5 - 110		%REC	1	3/31/2015 8:55:00 PM
Surr: Nitrobenzene-d5	83.9	11 - 110		%REC	1	3/31/2015 8:55:00 PM
Surr: 2,4,6-Tribromophenol	53.3	13 - 125		%REC	1	3/31/2015 8:55:00 PM
Surr: 2-Fluorobiphenyl	79.5	10 - 110		%REC	1	3/31/2015 8:55:00 PM
Surr: p-Terphenyl-d14	55.1	14 - 135		%REC	1	3/31/2015 8:55:00 PM

**Qualifiers:**

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- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-004A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-127

**Tag Number:**  
**Collection Date:** 3/20/2015 1:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>PCB-LIQUID-8082</b>						
					<b>SW8082</b>	<b>SW3510C</b>
<b>SVOC PCB (8082) 7-AROCHLORS</b>					Analyst: AKE	
Aroclor 1016	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1221	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1232	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1242	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1248	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1254	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1260	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Aroclor 1268	ND	0.000200	U	mg/L	1	4/1/2015 11:18:00 AM
Surr: Tetrachloro-m-xylene	72.0	5 - 119		%REC	1	4/1/2015 11:18:00 AM
<b>VOLATILE ORGANIC COMPOUNDS (SW8260)</b>						
<b>VOC BY GC/MS (8260)</b>					<b>SW8260B</b>	Analyst: MES
1,1,1,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,1,1-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,1,2,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,1,2-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,1-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,1-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,1-Dichloropropene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,2,3-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,2,3-Trichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Benzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Toluene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Ethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Isopropylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,2,4-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Naphthalene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,2,4-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
DBCP	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,2-Dibromoethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,2-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,2-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

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TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-004A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-127

**Tag Number:**  
**Collection Date:** 3/20/2015 1:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>VOLATILE ORGANIC COMPOUNDS (SW8260)</b>		<b>SW8260B</b>				Analyst: MES
<b>VOC BY GC/MS (8260)</b>						
1,3,5-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,3-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,3-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
1,4-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
2,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
2-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
4-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Bromobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Bromochloromethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Bromodichloromethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Bromoform	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Bromomethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Carbon tetrachloride	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Chlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Chloroethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Chloroform	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Chloromethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
cis-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Dibromomethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Dichlorodifluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Hexachlorobutadiene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
m,p-Xylene	ND	0.0100	U	mg/L	1	3/23/2015 2:50:00 PM
Methylene chloride	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
n-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
n-Propylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
o-Xylene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
p-Isopropyltoluene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
sec-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Styrene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
tert-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Tetrachloroethene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
trans-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Trichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM
Trichlorofluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 2:50:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

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Cuyahoga Falls, Ohio 44223  
TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-004A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-127

**Tag Number:**  
**Collection Date:** 3/20/2015 1:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B	Analyst: MES	
VOC BY GC/MS (8260)						
Vinyl chloride	ND	0.00200	U	mg/L	1	3/23/2015 2:50:00 PM
Surr: 4-Bromofluorobenzene	92.7	70 - 130		%REC	1	3/23/2015 2:50:00 PM
Surr: Dibromofluoromethane	99.2	70 - 130		%REC	1	3/23/2015 2:50:00 PM
Surr: Toluene-d8	97.5	70 - 130		%REC	1	3/23/2015 2:50:00 PM

### Qualifiers:

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E Value above quantitation range  
M Manual Integration used to determine area response  
ND Not Detected at the Reporting Limit  
P Second column confirmation exceeds  
R RPD outside accepted recovery limits  
U Samples with CalcVal < MDL

C Value is below Minimum Compound Limit.  
H Holding times for preparation or analysis exceeded  
N Tentatively identified compounds  
O RSD is greater than RSDlimit  
PL Permit Limit  
RL Reporting Detection Limit  
J Analyte detected below quantitation limits

Original

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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-005A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-128

**Tag Number:**  
**Collection Date:** 3/20/2015 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>						
		<b>SW8270C</b>	<b>SW3510C</b>	<b>Analyst: AKE</b>		
1,2,4-Trichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
1,2-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
1,2-Diphenylhydrazine	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
1,3-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
1,4-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
2,4,6-Trichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
2,4-Dichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
2,4-Dimethylphenol	ND	0.01200	U	mg/L	1	3/31/2015 9:31:00 PM
2,4-Dinitrophenol	ND	0.01200	U	mg/L	1	3/31/2015 9:31:00 PM
2,4-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
2,6-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
2-Chloronaphthalene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
2-Chlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
2-Nitrophenol	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
3,3'-Dichlorobenzidine	ND	0.01600	U	mg/L	1	3/31/2015 9:31:00 PM
4,6-Dinitro-o-cresol	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
4-Bromophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
4-Chlorophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
4-Nitrophenol	ND	0.01200	U	mg/L	1	3/31/2015 9:31:00 PM
Acenaphthene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Acenaphthylene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Anthracene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Benzidine	ND	0.01400	U	mg/L	1	3/31/2015 9:31:00 PM
Benzo(a)anthracene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Benzo(a)pyrene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Benzo(g,h,i)perylene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Benzo(k)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Benzo(b)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Bis(2-chloroethoxy)methane	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Bis(2-chloroethyl) ether	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Bis(2-chloroisopropyl) ether	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Bis(2-ethylhexyl) phthalate	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Butyl benzyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Chrysene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

CLIENT: Renew Environmental, LLC

Tag Number:

Matrix: NON-POTABLE WATER

Collection Date: 3/20/2015 1:30:00 PM

Lab ID: 15031930-005A

Project: Struktol Phase II

Client Sample ID MW-128

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>						
					SW8270C	SW3510C Analyst: AKE
Di-n-butyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Di-n-octyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Dibenzo (a,h) anthracene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Diethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Dimethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Fluorene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Hexachlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Hexachlorobutadiene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Hexachlorocyclopentadiene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Hexachloroethane	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Indeno(1,2,3-cd)pyrene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Isophorone	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
N-Nitrosodi-n-propylamine	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
N-Nitrosodimethylamine	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
N-Nitrosodiphenylamine	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Naphthalene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Nitrobenzene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
p-Chloro-m-cresol	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Pentachlorophenol	ND	0.01200	U	mg/L	1	3/31/2015 9:31:00 PM
Phenanthrene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Phenol	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Pyrene	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
m&p-Cresol	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Dibenzofuran	ND	0.004000	U	mg/L	1	3/31/2015 9:31:00 PM
Cresols, Total	ND	0.05000	U	mg/L	1	3/31/2015 9:31:00 PM
Surr: 2-Fluorophenol	45.6	14 - 110		%REC	1	3/31/2015 9:31:00 PM
Surr: Phenol-d6	38.8	5 - 110		%REC	1	3/31/2015 9:31:00 PM
Surr: Nitrobenzene-d5	79.7	11 - 110		%REC	1	3/31/2015 9:31:00 PM
Surr: 2,4,6-Tribromophenol	51.2	13 - 125		%REC	1	3/31/2015 9:31:00 PM
Surr: 2-Fluorobiphenyl	77.6	10 - 110		%REC	1	3/31/2015 9:31:00 PM
Surr: p-Terphenyl-d14	49.8	14 - 135		%REC	1	3/31/2015 9:31:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015 1:30:00 PM

**Lab ID:** 15031930-005A

**Project:** Struktol Phase II

**Client Sample ID** MW-128

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>PCB-LIQUID-8082</b>						
					<b>SW8082</b>	<b>SW3510C</b>
<b>SVOC PCB (8082) 7-AROCHLORS</b>					Analyst: AKE	
Aroclor 1016	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1221	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1232	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1242	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1248	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1254	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1260	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1268	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Surr: Tetrachloro-m-xylene	90.0	5 - 119		%REC	1	4/1/2015 11:34:00 AM
<b>VOLATILE ORGANIC COMPOUNDS (SW8260)</b>						
<b>VOC BY GC/MS (8260)</b>					<b>SW8260B</b>	Analyst: MES
1,1,1,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,1,1-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,1,2,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,1,2-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,1-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,1-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,1-Dichloropropene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,2,3-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,2,3-Trichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Benzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Toluene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Ethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Isopropylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,2,4-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Naphthalene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,2,4-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
DBCP	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,2-Dibromoethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,2-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,2-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

Original





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Cuyahoga Falls, Ohio 44223  
TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-005A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-128

**Tag Number:**  
**Collection Date:** 3/20/2015 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B		Analyst: MES
VOC BY GC/MS (8260)						
1,3,5-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,3-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,3-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
1,4-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
2,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
2-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
4-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Bromobenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Bromochloromethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Bromodichloromethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Bromoform	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Bromomethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Carbon tetrachloride	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Chlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Chloroethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Chloroform	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Chloromethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
cis-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Dibromomethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Dichlorodifluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Hexachlorobutadiene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
m,p-Xylene	ND	0.0100	U	mg/L	1	3/23/2015 3:25:00 PM
Methylene chloride	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
n-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
n-Propylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
o-Xylene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
p-Isopropyltoluene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
sec-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Styrene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
tert-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Tetrachloroethene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
trans-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Trichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM
Trichlorofluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 3:25:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

Original



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TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-005A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-128

**Tag Number:**  
**Collection Date:** 3/20/2015 1:30:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B	Analyst: MES	
VOC BY GC/MS (8260)						
Vinyl chloride	ND	0.00200	U	mg/L	1	3/23/2015 3:25:00 PM
Surr: 4-Bromofluorobenzene	91.7	70 - 130		%REC	1	3/23/2015 3:25:00 PM
Surr: Dibromofluoromethane	100	70 - 130		%REC	1	3/23/2015 3:25:00 PM
Surr: Toluene-d8	96.6	70 - 130		%REC	1	3/23/2015 3:25:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
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- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
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Original

Page 29 of 38



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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-006A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-129

**Tag Number:**  
**Collection Date:** 3/20/2015 1:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>						
		SW8270C	SW3510C	Analyst: AKE		
1,2,4-Trichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
1,2-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
1,2-Diphenylhydrazine	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
1,3-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
1,4-Dichlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
2,4,6-Trichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
2,4-Dichlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
2,4-Dimethylphenol	ND	0.01200	U	mg/L	1	3/31/2015 10:07:00 PM
2,4-Dinitrophenol	ND	0.01200	U	mg/L	1	3/31/2015 10:07:00 PM
2,4-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
2,6-Dinitrotoluene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
2-Chloronaphthalene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
2-Chlorophenol	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
2-Nitrophenol	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
3,3'-Dichlorobenzidine	ND	0.01600	U	mg/L	1	3/31/2015 10:07:00 PM
4,6-Dinitro-o-cresol	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
4-Bromophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
4-Chlorophenyl phenyl ether	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
4-Nitrophenol	ND	0.01200	U	mg/L	1	3/31/2015 10:07:00 PM
Acenaphthene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Acenaphthylene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Anthracene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Benzidine	ND	0.01400	U	mg/L	1	3/31/2015 10:07:00 PM
Benzo(a)anthracene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Benzo(a)pyrene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Benzo(g,h,i)perylene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Benzo(k)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Benzo(b)fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Bis(2-chloroethoxy)methane	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Bis(2-chloroethyl) ether	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Bis(2-chloroisopropyl) ether	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Bis(2-ethylhexyl) phthalate	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Butyl benzyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Chrysene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
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# Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-006A  
**Project:** Struktol Phase II  
**Client Sample ID** MW-129

**Tag Number:**  
**Collection Date:** 3/20/2015 1:45:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>SVOC ANALYSIS (8270)-</b>						
<b>SEMIVOLATILE ORGANIC COMPOUNDS BY GC/MS (SW8270C)</b>						
					<b>SW8270C</b>	<b>SW3510C</b> Analyst: AKE
Di-n-butyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Di-n-octyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Dibenzo (a,h) anthracene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Diethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Dimethyl phthalate	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Fluoranthene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Fluorene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Hexachlorobenzene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Hexachlorobutadiene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Hexachlorocyclopentadiene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Hexachloroethane	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Indeno(1,2,3-cd)pyrene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Isophorone	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
N-Nitrosodi-n-propylamine	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
N-Nitrosodimethylamine	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
N-Nitrosodiphenylamine	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Naphthalene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Nitrobenzene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
p-Chloro-m-cresol	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Pentachlorophenol	ND	0.01200	U	mg/L	1	3/31/2015 10:07:00 PM
Phenanthrene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Phenol	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Pyrene	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
m&p-Cresol	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Dibenzofuran	ND	0.004000	U	mg/L	1	3/31/2015 10:07:00 PM
Cresols, Total	ND	0.05000	U	mg/L	1	3/31/2015 10:07:00 PM
Surr: 2-Fluorophenol	42.6	14 - 110		%REC	1	3/31/2015 10:07:00 PM
Surr: Phenol-d6	37.3	5 - 110		%REC	1	3/31/2015 10:07:00 PM
Surr: Nitrobenzene-d5	79.1	11 - 110		%REC	1	3/31/2015 10:07:00 PM
Surr: 2,4,6-Tribromophenol	47.8	13 - 125		%REC	1	3/31/2015 10:07:00 PM
Surr: 2-Fluorobiphenyl	71.9	10 - 110		%REC	1	3/31/2015 10:07:00 PM
Surr: p-Terphenyl-d14	60.8	14 - 135		%REC	1	3/31/2015 10:07:00 PM

## Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
M Manual Integration used to determine area response  
ND Not Detected at the Reporting Limit  
P Second column confirmation exceeds  
R RPD outside accepted recovery limits  
U Samples with CalcVal < MDL

C Value is below Minimum Compound Limit.  
H Holding times for preparation or analysis exceeded  
N Tentatively identified compounds  
O RSD is greater than RSDlimit  
PL Permit Limit  
RL Reporting Detection Limit  
J Analyte detected below quantitation limits

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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015 1:45:00 PM

**Lab ID:** 15031930-006A

**Project:** Struktol Phase II

**Client Sample ID** MW-129

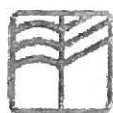
Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>PCB-LIQUID-8082</b>						
					<b>SW8082</b>	<b>SW3510C</b>
<b>SVOC PCB (8082) 7-AROCHLORS</b>					Analyst: AKE	
Aroclor 1016	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1221	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1232	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1242	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1248	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1254	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1260	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Aroclor 1268	ND	0.000200	U	mg/L	1	4/1/2015 11:34:00 AM
Surr: Tetrachloro-m-xylene	77.0	5 - 119		%REC	1	4/1/2015 11:34:00 AM
<b>VOLATILE ORGANIC COMPOUNDS (SW8260)</b>						
<b>VOC BY GC/MS (8260)</b>					<b>SW8260B</b>	Analyst: MES
1,1,1,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,1,1-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,1,2,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,1,2-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,1-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,1-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,1-Dichloropropene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,2,3-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,2,3-Trichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Benzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Toluene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Ethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Isopropylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,2,4-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Naphthalene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,2,4-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
DBCP	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,2-Dibromoethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,2-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,2-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
M Manual Integration used to determine area response  
ND Not Detected at the Reporting Limit  
P Second column confirmation exceeds  
R RPD outside accepted recovery limits  
U Samples with CalcVal < MDL

C Value is below Minimum Compound Limit.  
H Holding times for preparation or analysis exceeded  
N Tentatively identified compounds  
O RSD is greater than RSDlimit  
PL Permit Limit  
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J Analyte detected below quantitation limits

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# Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015 1:45:00 PM

**Lab ID:** 15031930-006A

**Project:** Struktol Phase II

**Client Sample ID** MW-129

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B		Analyst: MES
VOC BY GC/MS (8260)						
1,3,5-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,3-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,3-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
1,4-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
2,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
2-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
4-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Bromobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Bromochloromethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Bromodichloromethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Bromoform	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Bromomethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Carbon tetrachloride	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Chlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Chloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Chloroform	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Chloromethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
cis-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Dibromomethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Dichlorodifluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Hexachlorobutadiene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
m,p-Xylene	ND	0.0100	U	mg/L	1	3/23/2015 4:00:00 PM
Methylene chloride	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
n-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
n-Propylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
o-Xylene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
p-Isopropyltoluene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
sec-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Styrene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
tert-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Tetrachloroethene	0.00365	0.00500	J	mg/L	1	3/23/2015 4:00:00 PM
trans-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Trichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM
Trichlorofluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 4:00:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
- H Holding times for preparation or analysis exceeded
- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

Original



**SUMMIT**  
ENVIRONMENTAL TECHNOLOGIES, INC.  
Analytical Laboratories

Summit Environmental Technologies, Inc.  
3310 Win St.  
Cuyahoga Falls, Ohio 44223  
TEL: (330) 253-8211 FAX: (330) 253-4489  
Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015 1:45:00 PM

**Lab ID:** 15031930-006A

**Project:** Struktol Phase II

**Client Sample ID** MW-129

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B	Analyst: MES	
VOC BY GC/MS (8260)						
Vinyl chloride	ND	0.00200	U	mg/L	1	3/23/2015 4:00:00 PM
Surr: 4-Bromofluorobenzene	93.4	70 - 130		%REC	1	3/23/2015 4:00:00 PM
Surr: Dibromofluoromethane	102	70 - 130		%REC	1	3/23/2015 4:00:00 PM
Surr: Toluene-d8	96.5	70 - 130		%REC	1	3/23/2015 4:00:00 PM

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
M Manual Integration used to determine area response  
ND Not Detected at the Reporting Limit  
P Second column confirmation exceeds  
R RPD outside accepted recovery limits  
U Samples with CalcVal < MDL

C Value is below Minimum Compound Limit.  
H Holding times for preparation or analysis exceeded  
N Tentatively identified compounds  
O RSD is greater than RSDlimit  
PL Permit Limit  
RL Reporting Detection Limit  
J Analyte detected below quantitation limits

Original

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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015

**Lab ID:** 15031930-007A

**Project:** Struktol Phase II

**Client Sample ID** Dup-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B		Analyst: MES
VOC BY GC/MS (8260)						
1,1,1,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,1,1-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,1,2,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,1,2-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,1-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,1-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,1-Dichloropropene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,2,3-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,2,3-Trichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Benzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Toluene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Ethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Isopropylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,2,4-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Naphthalene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,2,4-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
DBCP	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,2-Dibromoethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,2-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,2-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,3,5-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,3-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,3-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
1,4-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
2,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
2-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
4-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Bromobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Bromochloromethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Bromodichloromethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Bromoform	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Bromomethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Carbon tetrachloride	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- M Manual Integration used to determine area response
- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL

- C Value is below Minimum Compound Limit.
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- N Tentatively identified compounds
- O RSD is greater than RSDlimit
- PL Permit Limit
- RL Reporting Detection Limit
- J Analyte detected below quantitation limits

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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC

**Tag Number:**

**Matrix:** NON-POTABLE WATER

**Collection Date:** 3/20/2015

**Lab ID:** 15031930-007A

**Project:** Struktol Phase II

**Client Sample ID** Dup-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B		Analyst: MES
VOC BY GC/MS (8260)						
Chlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Chloroethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Chloroform	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Chloromethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
cis-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Dibromomethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Dichlorodifluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Hexachlorobutadiene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
m,p-Xylene	ND	0.0100	U	mg/L	1	3/23/2015 4:34:00 PM
Methylene chloride	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
n-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
n-Propylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
o-Xylene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
p-Isopropyltoluene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
sec-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Styrene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
tert-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Tetrachloroethene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
trans-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Trichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Trichlorofluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 4:34:00 PM
Vinyl chloride	ND	0.00200	U	mg/L	1	3/23/2015 4:34:00 PM
Surr: 4-Bromofluorobenzene	90.7	70 - 130		%REC	1	3/23/2015 4:34:00 PM
Surr: Dibromofluoromethane	99.6	70 - 130		%REC	1	3/23/2015 4:34:00 PM
Surr: Toluene-d8	96.3	70 - 130		%REC	1	3/23/2015 4:34:00 PM

### Qualifiers:

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M Manual Integration used to determine area response  
ND Not Detected at the Reporting Limit  
P Second column confirmation exceeds  
R RPD outside accepted recovery limits  
U Samples with CalcVal < MDL

C Value is below Minimum Compound Limit.  
H Holding times for preparation or analysis exceeded  
N Tentatively identified compounds  
O RSD is greater than RSDlimit  
PL Permit Limit  
RL Reporting Detection Limit  
J Analyte detected below quantitation limits

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Website: <http://www.settek.com>

## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-008A  
**Project:** Struktol Phase II  
**Client Sample ID** Trip Blank

**Tag Number:**

**Collection Date:**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS (SW8260)				SW8260B		Analyst: MES
VOC BY GC/MS (8260)						
1,1,1,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,1,1-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,1,2,2-Tetrachloroethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,1,2-Trichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,1-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,1-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,1-Dichloropropene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,2,3-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,2,3-Trichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Benzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Toluene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Ethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Isopropylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,2,4-Trichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Naphthalene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,2,4-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
DBCP	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,2-Dibromoethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,2-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,2-Dichloroethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,3,5-Trimethylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,3-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,3-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
1,4-Dichlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
2,2-Dichloropropane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
2-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
4-Chlorotoluene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Bromobenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Bromochloromethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Bromodichloromethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Bromoform	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Bromomethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Carbon tetrachloride	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
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- ND Not Detected at the Reporting Limit
- P Second column confirmation exceeds
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## Analytical Report

(base report)

WO#: 15031930

Date Reported: 4/1/2015

**CLIENT:** Renew Environmental, LLC  
**Matrix:** NON-POTABLE WATER  
**Lab ID:** 15031930-008A  
**Project:** Struktol Phase II  
**Client Sample ID** Trip Blank

**Tag Number:**

**Collection Date:**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
----------	--------	----	------	-------	----	---------------

### VOLATILE ORGANIC COMPOUNDS (SW8260) VOC BY GC/MS (8260)

SW8260B

Analyst: MES

Chlorobenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Chloroethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Chloroform	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Chloromethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
cis-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Dibromomethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Dichlorodifluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Hexachlorobutadiene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
m,p-Xylene	ND	0.0100	U	mg/L	1	3/23/2015 5:09:00 PM
Methylene chloride	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
n-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
n-Propylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
o-Xylene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
p-Isopropyltoluene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
sec-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Styrene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
tert-Butylbenzene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Tetrachloroethene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
trans-1,2-Dichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Trichloroethene	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Trichlorofluoromethane	ND	0.00500	U	mg/L	1	3/23/2015 5:09:00 PM
Vinyl chloride	ND	0.00200	U	mg/L	1	3/23/2015 5:09:00 PM
Surr: 4-Bromofluorobenzene	91.3	70 - 130		%REC	1	3/23/2015 5:09:00 PM
Surr: Dibromofluoromethane	104	70 - 130		%REC	1	3/23/2015 5:09:00 PM
Surr: Toluene-d8	95.9	70 - 130		%REC	1	3/23/2015 5:09:00 PM

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
M Manual Integration used to determine area response  
ND Not Detected at the Reporting Limit  
P Second column confirmation exceeds  
R RPD outside accepted recovery limits  
U Samples with CalcVal < MDL

C Value is below Minimum Compound Limit.  
H Holding times for preparation or analysis exceeded  
N Tentatively identified compounds  
O RSD is greater than RSDlimit  
PL Permit Limit  
RL Reporting Detection Limit  
J Analyte detected below quantitation limits

Original

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Summit Environmental Technologies, Inc.  
3310 Win Street  
Cuyahoga Falls, Ohio 44223  
Tel: 330.253.8211 Fax: 330.253.4489

# Analysis Request/Chain of Custody

For Summit Environmental Technologies, Inc. use only

Page 1 of 1 SET No.

Company Name (Please Print)		Project Name	
Renew Environmental		Struck to 1 Phase II	
Company Address		Project Address	
3510 Middlehurst Street		5130 Commerce Drive	
Norton OH 44203		STOW OHIO	
Client Phone No.	Report to	PO#	
330.794.7148	Tom Shalala		
Client Fax No.	Quote No.		
Client Email	Check if Ohio VAP samples	<input type="checkbox"/>	
tschalala@renewenviro.com			
Contact Person			
Tom Shalala			
Sampled by			
Paul Beck			
#	Sample Identification	Date Collected	Time Collected

Please Check Analytical Box			
Matrix: S=Solid, L=Liquid, O=Oil	SL=Sludge, A=Air, DW=Drinking Water	Preservative	Number of Containers
Volcs 8260			
PCAS 8270			
PCAS 8082			
MW-122	L	yes	5
MW-123	L	yes	8
MW-126	L	yes	5
MW-127	L	yes	5
MW-128	L	yes	5
MW-129	L	yes	5
Dup-2	L	yes	3
Trip Blank	L	yes	1

Relinquished by:	Date	Time	Received by:	Date	Time
Paul Beck	3/20/15	3:03			
Received in lab by:	Date	Time	Rush Requested By:	Date	Time
Paul Beck	3/20/15	3:03	Normal		

Must be approved by lab manager

Notes/Comments:  
Preservative = HCl (8260)  
MW-123 = MS/MSO sample (extra bottles)

White and yellow pages should accompany samples to the laboratory. The client retains the pink page.

105485

Summit Environmental Technologies, Inc.  
Cooler Receipt Form

Client: Rem Initials of person inspecting cooler and samples: CR  
Order Number: 1523/930  
Date Received: 3/20/15 Time Received: 3:03 Date cooler(s) opened and samples inspected: 3/20/15

Number of Coolers/Boxes: \_\_\_\_\_ N/A

Shipper: FED EX UPS DHL Airborne US Postal Walk-in Pickup Other: \_\_\_\_\_

Packaging: Peanuts Bubble Wrap Paper Foam None Other: \_\_\_\_\_

Tape on cooler/box: \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

Custody Seals intact \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

C-O-C in plastic \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

Ice ✓ Blue ice \_\_\_\_\_ present / absent / melted \_\_\_\_\_ N/A

Sample Temperature IR Gun #16020459 CF 0.0 °C 1.7 °C \_\_\_\_\_ N/A

Radiological Testing Instrument serial #35127 \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

Use 1 sheet per sample for Radiological Testing. If sample is HOT, the Radiological Safety Officer must be notified immediately.

C-O-C filled out properly \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

Samples in separate bags \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

Sample containers intact\* \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

\*If no, list broken sample(s): \_\_\_\_\_

Sample label(s) complete (ID, date, etc.) \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

Label(s) agree with C-O-C \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

Correct containers used \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

Sufficient sample received \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

Bubbles absent from 40 mL vials\*\* \_\_\_\_\_ Y \_\_\_\_\_ N \_\_\_\_\_ N/A

\*\* Samples with bubbles <6mm are acceptable. Indicate bubble size if >6mm. \_\_\_\_\_

Was client contacted about samples \_\_\_\_\_ Y \_\_\_\_\_ N

Will client send new samples \_\_\_\_\_ Y \_\_\_\_\_ N

Client contact: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Logged in by: \_\_\_\_\_

Comments: \_\_\_\_\_



Brownfield Restoration Group  
1000 S. Cleveland-Massillon Rd  
Akron, OH 44333  
Kristen Braziel

Client Project: Former Wilkinson Property 04037

EA Group Project Number: 120500044

Received on May 3, 2012

The following analytical report contains results as requested for samples submitted to EA Group. The results included in this report have been reviewed for compliance with the analytical methods indicated in this report. All data has been found to be compliant with accepted laboratory protocol, except as noted in the QC narrative. Industrial hygiene reports, air and/or surface concentrations results are based upon sampling information provided by the client. Industrial hygiene results will not be blank corrected. Analyst initials of REF indicate analysis performed at a subcontract facility.

If you have questions, comments or require further assistance regarding this report, please contact your client services representative or one of the individuals listed below.

Data or reporting:

Jeff Herbert - Lab Manager  
jherbert@eagroupohio.com

Debbie Lauer - Lab Supervisor  
dlauer@eagroupohio.com

Sample tracking, supplies:

Lisa Foose - Sample Control  
sreceiving@eagroupohio.com

Mike Herbert - Supervisor  
mherbert@eagroupohio.com

Invoice Related:

Bonnie Renbarger - Office Manager  
brenbarger@eagroupohio.com

Reproduction of this report is prohibited except in its entirety. Unless noted, soil, sludge and sediment results are reported on dry weight basis. The "Sample Reporting Limit" is based on the method used for analysis and does not refer to any regulatory limit. These results relate only to the items tested.



## **Laboratory Analytical Report**

### **Brownfield Restoration Group**

1000 S. Cleveland-Massillon Rd

Suite 106

Akron, OH 44333

Attention:  
Kristen Braziel

### **Client Project:**

Former Wilkinson Property 04037

VAP

### **EA Group Workorder:**

1205-00044

Jeffrey A. Herbert  
Laboratory Manager

May 4, 2012





Sample Receive Date 5/ 3/2012

Sample Listing

<u>EAG</u>		<u>Client</u>
<u>Sample Identification</u>		<u>Sample Identification</u>
120500044	- 001	MW-119
120500044	- 003	MW-121

<u>EAG</u>		<u>Client</u>
<u>Sample Identification</u>		<u>Sample Identification</u>
120500044	- 002	MW-120
120500044	- 004	MW-118



## **Project Narrative**

### **1205-00044**

All analyses performed by EA Group were done using established laboratory SOPs. Management has reviewed the data for compliance with the laboratory QA/QC plan and data have been found to be compliant with the laboratory protocols unless otherwise noted below. All results listed for this report relate only to the samples submitted on this work order.

The temperature of the sample(s) upon receipt was 3.9°C. Samples were transported on wet ice.

#### Misc. QC Comments

Percent Moisture is used to report results on a dry weight basis.

When necessary, reporting limits of individual samples may be raised due to high concentration of interfering compounds or target analytes, or quantity of sample available for analysis.

pH method note: If this analysis was performed in the laboratory, it may not meet the "immediate analysis" requirement that applies to most wastewater monitoring samples. In such cases, analysis for pH should be done at the time of sampling.

The results listed in this report relate only to the samples submitted to EA Group per the chain of custody.

#### Data Flag Table

B	The method blank contained a standard laboratory contaminant (Methylene Chloride, Acetone, Hexane, Phthalates, etc.) above the standard laboratory method detection limit. If the analyte is present in the sample at a concentration up to ten times the blank level, the result is reported with a "B" indicating method blank contamination. Samples will be reported without a "B" if the analyte concentration in the sample is greater than ten times the blank level.
E	An analytical result marked with an "E" indicates the result reported is above the high end limit of the calibration curve and should be considered an estimated concentration.
DIL	Due to matrix interference or high analyte concentration, a dilution was required. The spikes and/or surrogates results could not be quantitated and therefore marked "DIL".
J	An analytical result marked with a "J" indicates the result reported was below the standard reporting limit and above the method detection limit. As the observed level approaches the MDL there is an increasing probability of a false positive response.
MI	Analytical results marked as "MI" indicate that due to inherent matrix interference, the result could not be quantitated.
#	Results flagged "#" indicate the reported result may be outside allowable permit levels as provided by the client, when applicable.
NA	A result or field marked as "NA" indicates that it was not applicable for this project.
Q	A quality control result flagged with a "Q" indicates the percent recovery was outside the acceptable range as determined by the laboratory.

\*\* Positive results for this analyte represent a probable combination of 3-Methylphenol (m-Cresol) and 4-Methylphenol (p-Cresol).



**EAG Workorder** 1205-00044

**EAG ID:** 1205-00044-001

**Client ID:** MW-119

**Client Project:** Former Wilkinson Property 04037

**Matrix:** Water

**Analyst:** JAH

**Date Sampled:** 05/02/2012

**Time Sampled:** 0940

**Date Received:** 05/03/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Polychlorinated Biphenyls: SW846-8081					
Aroclor 1016	12674-11-2	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1221	11104-28-2	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1232	11141-16-5	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1242	53469-21-9	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1248	12672-29-6	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1254	11097-69-1	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1260	11096-82-5	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1268	11100-14-4	<0.50	0.50	ug/liter	5/03/2012
Extraction: SW846-3510C		Complete			5/03/2012

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Recovery Limits</u>
Tetrachloro-m-Xylene	79.1	(50 - 116)
Decachlorobiphenyl	92.7	(61 - 134)



**EAG Workorder** 1205-00044

**EAG ID:** 1205-00044-002

**Client ID:** MW-120

**Client Project:** Former Wilkinson Property 04037

**Matrix:** Water

**Analyst:** JAH

**Date Sampled:** 05/02/2012

**Time Sampled:** 1020

**Date Received:** 05/03/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Polychlorinated Biphenyls: SW846-8081					
Aroclor 1016	12674-11-2	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1221	11104-28-2	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1232	11141-16-5	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1242	53469-21-9	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1248	12672-29-6	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1254	11097-69-1	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1260	11096-82-5	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1268	11100-14-4	<0.50	0.50	ug/liter	5/03/2012
Extraction: SW846-3510C		Complete			5/03/2012

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Recovery Limits</u>
Tetrachloro-m-Xylene	81.2	(50 - 116)
Decachlorobiphenyl	97.8	(61 - 134)



**EAG Workorder** 1205-00044

**EAG ID:** 1205-00044-003

**Client ID:** MW-121

**Client Project:** Former Wilkinson Property 04037

**Matrix:** Water

**Analyst:** JAH

**Date Sampled:** 05/02/2012

**Time Sampled:** 1135

**Date Received:** 05/03/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Polychlorinated Biphenyls: SW846-8081					
Aroclor 1016	12674-11-2	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1221	11104-28-2	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1232	11141-16-5	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1242	53469-21-9	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1248	12672-29-6	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1254	11097-69-1	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1260	11096-82-5	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1268	11100-14-4	<0.50	0.50	ug/liter	5/03/2012
Extraction: SW846-3510C		Complete			5/03/2012

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Recovery Limits</u>
Tetrachloro-m-Xylene	56.5	(50 - 116)
Decachlorobiphenyl	87.8	(61 - 134)



**EAG Workorder** 1205-00044

**EAG ID:** 1205-00044-004

**Client ID:** MW-118

**Client Project:** Former Wilkinson Property 04037

**Matrix:** Water

**Analyst:** JAH

**Date Sampled:** 05/02/2012

**Time Sampled:** 1230

**Date Received:** 05/03/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Polychlorinated Biphenyls: SW846-8081					
Aroclor 1016	12674-11-2	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1221	11104-28-2	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1232	11141-16-5	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1242	53469-21-9	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1248	12672-29-6	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1254	11097-69-1	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1260	11096-82-5	<0.50	0.50	ug/liter	5/03/2012
Aroclor 1268	11100-14-4	<0.50	0.50	ug/liter	5/03/2012
Extraction: SW846-3510C		Complete			5/03/2012

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Recovery Limits</u>
Tetrachloro-m-Xylene	86.0	(50 - 116)
Decachlorobiphenyl	94.1	(61 - 134)



[www.eagroupphd.com](http://www.eagroupphd.com)  
[customerservice@eagroupphd.com](mailto:customerservice@eagroupphd.com)

## EAG WORK ORDER #

PAGE 1 OF 1

[illegible]



### **Affidavit of VAP Certified Laboratory**

[For VAP certified laboratories to attest to "certified data" under OAC 3745-300-13(N) and OAC 3745-300-04(A). Note that Ohio EPA is to receive a legible copy of the CL's affidavit. The entity that received the CL's analytical report under affidavit may retain the CL's affidavit original.]

State of Ohio )  
County of Lake ) ss:

I, Jeffrey Herbert, being first duly sworn according to law, state that, to the best of my knowledge, information and belief:

1. I am an adult over the age of eighteen years old and competent to testify herein.
2. I am employed by EA Group ("the laboratory") as Laboratory Manager. I am authorized to submit this affidavit on behalf of the laboratory.
3. The purpose of this submission is to support a request for a no further action letter or other aspects of a voluntary action, under Ohio's Voluntary Action Program (VAP) as set forth in Ohio Revised Code Chapter 3746 and Ohio Administrative Code (OAC) Chapter 3745-300.
4. EA Group performed analyses for Brownfield Restoration Group for a voluntary action at property known as Former Wilkinson Property 04037.
5. This affidavit applies to and is submitted with the following information, data, documents or reports for the property:

Document ID  
1204-00044

Date of Document  
May 4, 2012

6. EA Group was a VAP certified laboratory pursuant to OAC 3745-300-04 when it performed the analyses referenced herein.

*Revised 5/09, 8/09, 4/11; consistent with OAC 3745-300-04 (10/14/06, and rev. eff. 3/1/09 versions)*

Certified Lab Affidavit Pursuant to OAC 3745-300-13(N)






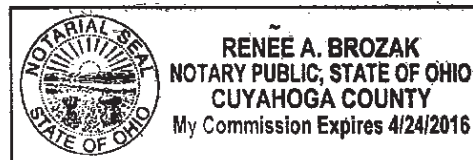
7. All analyses under this affidavit consist of VAP "certified data" as described in OAC 3745-300-04(A) -- unless paragraph b., below, specifies the exceptions:
- a. The laboratory performed the analyses within its current VAP certification. The laboratory was certified for each analyte, parameter group and method used at the time that it performed the analyses. The analyses were performed consistent with the laboratory's standard operating procedures and quality assurance program plan as approved under OAC 3745-300-04.
  - b. Exceptions, if any:
- 8 The information, data, documents and reports identified under this affidavit are true, accurate and complete.

Further affiant sayeth naught.

  
Signature of Affiant

Sworn to before me and subscribed in my presence this 4 day of MAY, 2012

  
Notary Public



*Revised 5/09, 8/09, 4/11; consistent with OAC 3745-300-04 (10/14/06, and rev. eff. 3/1/09 versions)*

Certified Lab Affidavit Pursuant to OAC 3745-300-13(N)



Brownfield Restoration Group  
1000 S. Cleveland-Massillon Rd  
Akron, OH 44333  
Kristen Braziel

Client Project: Former Wilkinson Property

EA Group Project Number: 120400365

Received on April 27, 2012

The following analytical report contains results as requested for samples submitted to EA Group. The results included in this report have been reviewed for compliance with the analytical methods indicated in this report. All data has been found to be compliant with accepted laboratory protocol, except as noted in the QC narrative. Industrial hygiene reports, air and/or surface concentrations results are based upon sampling information provided by the client. Industrial hygiene results will not be blank corrected. Analyst initials of REF indicate analysis performed at a subcontract facility.

If you have questions, comments or require further assistance regarding this report, please contact your client services representative or one of the individuals listed below.

Data or reporting:

Jeff Herbert - Lab Manager  
jherbert@eagroupohio.com

Debbie Lauer - Lab Supervisor  
dlauer@eagroupohio.com

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Invoice Related:

Bonnie Renbarger - Office Manager  
brenbarger@eagroupohio.com

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## **Laboratory Analytical Report**

### **Brownfield Restoration Group**

1000 S. Cleveland-Massillon Rd

Suite 106

Akron, OH 44333

Attention:  
Kristen Braziel

### **Client Project:**

Former Wilkinson Property

VAP

### **EA Group Workorder:**

1204-00365

Jeffrey A. Herbert  
Laboratory Manager

May 3, 2012



Sample Receive Date 4/27/2012

Sample Listing

<u>EAG</u>		<u>Client</u>
<u>Sample Identification</u>		<u>Sample Identification</u>
120400365	- 001	B-118 6-8
120400365	- 003	B-120 6-8

<u>EAG</u>		<u>Client</u>
<u>Sample Identification</u>		<u>Sample Identification</u>
120400365	- 002	B-119 8-10
120400365	- 004	B-121 4-6



## **Project Narrative**

### **1204-00365**

All analyses performed by EA Group were done using established laboratory SOPs. Management has reviewed the data for compliance with the laboratory QA/QC plan and data have been found to be compliant with the laboratory protocols unless otherwise noted below. All results listed for this report relate only to the samples submitted on this work order.

The temperature of the sample(s) upon receipt was 3.4°C. Samples were transported on wet ice.

#### Misc. QC Comments

Percent Moisture is used to report results on a dry weight basis.

When necessary, reporting limits of individual samples may be raised due to high concentration of interfering compounds or target analytes, or quantity of sample available for analysis.

pH method note: If this analysis was performed in the laboratory, it may not meet the "immediate analysis" requirement that applies to most wastewater monitoring samples. In such cases, analysis for pH should be done at the time of sampling.

The results listed in this report relate only to the samples submitted to EA Group per the chain of custody.

#### Data Flag Table

B	The method blank contained a standard laboratory contaminant (Methylene Chloride, Acetone, Hexane, Phthalates, etc.) above the standard laboratory method detection limit. If the analyte is present in the sample at a concentration up to ten times the blank level, the result is reported with a "B" indicating method blank contamination. Samples will be reported without a "B" if the analyte concentration in the sample is greater than ten times the blank level.
E	An analytical result marked with an "E" indicates the result reported is above the high end limit of the calibration curve and should be considered an estimated concentration.
DIL	Due to matrix interference or high analyte concentration, a dilution was required. The spikes and/or surrogates results could not be quantitated and therefore marked "DIL".
J	An analytical result marked with a "J" indicates the result reported was below the standard reporting limit and above the method detection limit. As the observed level approaches the MDL there is an increasing probability of a false positive response.
MI	Analytical results marked as "MI" indicate that due to inherent matrix interference, the result could not be quantitated.
#	Results flagged "#" indicate the reported result may be outside allowable permit levels as provided by the client, when applicable.
NA	A result or field marked as "NA" indicates that it was not applicable for this project.
Q	A quality control result flagged with a "Q" indicates the percent recovery was outside the acceptable range as determined by the laboratory.

\*\* Positive results for this analyte represent a probable combination of 3-Methylphenol (m-Cresol) and 4-Methylphenol (p-Cresol).



**EAG Workorder:** 1204-00365

**Client Project:** Former Wilkinson Property

**Client ID:** B-118 6-8

**Date/Time Sampled:** 4/24/2012 / 0945

**Received:** 4/27/2012

**EAG ID:** 1204-00365-1

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Prep Date</u>	<u>Analysis Date</u>	<u>Time</u>	<u>Analyst</u>
Percent Moisture		18	0.10	%	4/30/2012	4/30/2012		SLD

**Client ID:** B-119 8-10

**Date/Time Sampled:** 4/24/2012 / 1155

**Received:** 4/27/2012

**EAG ID:** 1204-00365-2

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Prep Date</u>	<u>Analysis Date</u>	<u>Time</u>	<u>Analyst</u>
Percent Moisture		18	0.10	%	4/30/2012	4/30/2012		SLD

**Client ID:** B-120 6-8

**Date/Time Sampled:** 4/24/2012 / 1410

**Received:** 4/27/2012

**EAG ID:** 1204-00365-3

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Prep Date</u>	<u>Analysis Date</u>	<u>Time</u>	<u>Analyst</u>
Percent Moisture		14	0.10	%	4/30/2012	4/30/2012		SLD

**Client ID:** B-121 4-6

**Date/Time Sampled:** 4/25/2012 / 0825

**Received:** 4/27/2012

**EAG ID:** 1204-00365-4

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Prep Date</u>	<u>Analysis Date</u>	<u>Time</u>	<u>Analyst</u>
Percent Moisture		11	0.10	%	4/30/2012	4/30/2012		SLD



**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-001

**Client ID:** B-118 6-8

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** JAH

**Date Sampled:** 04/24/2012

**Time Sampled:** 0945

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Polychlorinated Biphenyls: SW846-8082A					
Aroclor 1016	12674-11-2	<0.13	0.13	mg/kg	5/01/2012
Aroclor 1221	11104-28-2	<0.13	0.13	mg/kg	5/01/2012
Aroclor 1232	11141-16-5	<0.13	0.13	mg/kg	5/01/2012
Aroclor 1242	53469-21-9	<0.13	0.13	mg/kg	5/01/2012
Aroclor 1248	12672-29-6	<0.13	0.13	mg/kg	5/01/2012
Aroclor 1254	11097-69-1	<0.13	0.13	mg/kg	5/01/2012
<b>Aroclor 1260</b>	11096-82-5	<b>0.46</b>	0.13	mg/kg	5/01/2012
Aroclor 1268	11100-14-4	<0.13	0.13	mg/kg	5/01/2012
Extraction: SW846-3550		Complete			5/01/2012
<u>Surrogate</u>		<u>Percent Recovery</u>		<u>Recovery Limits</u>	
Tetrachloro-m-xylene		86.8		(63 - 128)	
Decachlorobiphenyl		81.5		(68 - 130)	



**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-001

**Client ID:** B-118 6-8

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** JAH

**Date Sampled:** 04/24/2012

**Time Sampled:** 0945

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Gasoline Range Organics: SW846-8015M					
Gasoline Range Organics: C6-C12		<1.2	1.2	mg/kg	4/30/2012
<u>Surrogate</u>		<u>Percent Recovery</u>		<u>Recovery Limits</u>	
Cumene		96.6		(76 - 122)	





**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-001

**Client ID:** B-118 6-8

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** DFM

**Date Sampled:** 04/24/2012

**Time Sampled:** 0945

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Total Petroleum Hydrocarbons: SW846-8015M					
Extractable Petroleum Hydrocarbons: C10-C20		<1300	1300	mg/kg	5/02/2012
<b>Extractable Petroleum Hydrocarbons: C20-C34</b>		<b>3400</b>	1300	mg/kg	5/02/2012
Extraction: SW846-3550		Complete			5/01/2012
<u>Surrogate</u>		<u>Percent Recovery</u>		<u>Recovery Limits</u>	
Tricontane		MI		(30 - 138)	



**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-002

**Client ID:** B-119 8-10

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** JAH

**Date Sampled:** 04/24/2012

**Time Sampled:** 1155

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Polychlorinated Biphenyls: SW846-8082A					
Aroclor 1016	12674-11-2	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1221	11104-28-2	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1232	11141-16-5	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1242	53469-21-9	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1248	12672-29-6	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1254	11097-69-1	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1260	11096-82-5	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1268	11100-14-4	<0.12	0.12	mg/kg	5/01/2012
Extraction: SW846-3550		Complete			5/01/2012

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Recovery Limits</u>
Tetrachloro-m-xylene	83.1	(63 - 128)
Decachlorobiphenyl	96.2	(68 - 130)



**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-002

**Client ID:** B-119 8-10

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** JAH

**Date Sampled:** 04/24/2012

**Time Sampled:** 1155

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Gasoline Range Organics: SW846-8015M					
Gasoline Range Organics: C6-C12		<0.25	0.25	mg/kg	4/30/2012
<u>Surrogate</u>		<u>Percent Recovery</u>		<u>Recovery Limits</u>	
Cumene		101		(76 - 122)	



**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-002

**Client ID:** B-119 8-10

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** DFM

**Date Sampled:** 04/24/2012

**Time Sampled:** 1155

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Total Petroleum Hydrocarbons: SW846-8015M					
Extractable Petroleum Hydrocarbons: C10-C20		<130	130	mg/kg	5/01/2012
Extractable Petroleum Hydrocarbons: C20-C34		<130	130	mg/kg	5/01/2012
Extraction: SW846-3550		Complete			5/01/2012
<u>Surrogate</u>		<u>Percent Recovery</u>		<u>Recovery Limits</u>	
Tricontane		105		(30 - 138)	



**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-003

**Client ID:** B-120 6-8

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** JAH

**Date Sampled:** 04/24/2012

**Time Sampled:** 1410

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Polychlorinated Biphenyls: SW846-8082A					
Aroclor 1016	12674-11-2	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1221	11104-28-2	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1232	11141-16-5	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1242	53469-21-9	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1248	12672-29-6	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1254	11097-69-1	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1260	11096-82-5	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1268	11100-14-4	<0.12	0.12	mg/kg	5/01/2012
Extraction: SW846-3550		Complete			5/01/2012

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Recovery Limits</u>
Tetrachloro-m-xylene	83.1	(63 - 128)
Decachlorobiphenyl	96.2	(68 - 130)



**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-003

**Client ID:** B-120 6-8

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** JAH

**Date Sampled:** 04/24/2012

**Time Sampled:** 1410

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Gasoline Range Organics: SW846-8015M					
Gasoline Range Organics: C6-C12		<0.23	0.23	mg/kg	4/30/2012
<u>Surrogate</u>		<u>Percent Recovery</u>		<u>Recovery Limits</u>	
Cumene		86.6		(76 - 122)	



**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-003

**Client ID:** B-120 6-8

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** DFM

**Date Sampled:** 04/24/2012

**Time Sampled:** 1410

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Total Petroleum Hydrocarbons: SW846-8015M					
Extractable Petroleum Hydrocarbons: C10-C20		<1200	1200	mg/kg	5/02/2012
<b>Extractable Petroleum Hydrocarbons: C20-C34</b>		<b>6400</b>	1200	mg/kg	5/02/2012
Extraction: SW846-3550		Complete			5/01/2012
<u>Surrogate</u>		<u>Percent Recovery</u>		<u>Recovery Limits</u>	
Tricontane		MI		(30 - 138)	



**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-004

**Client ID:** B-121 4-6

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** JAH

**Date Sampled:** 04/25/2012

**Time Sampled:** 0825

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Polychlorinated Biphenyls: SW846-8082A					
Aroclor 1016	12674-11-2	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1221	11104-28-2	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1232	11141-16-5	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1242	53469-21-9	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1248	12672-29-6	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1254	11097-69-1	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1260	11096-82-5	<0.12	0.12	mg/kg	5/01/2012
Aroclor 1268	11100-14-4	<0.12	0.12	mg/kg	5/01/2012
Extraction: SW846-3550		Complete			5/01/2012

<u>Surrogate</u>	<u>Percent Recovery</u>	<u>Recovery Limits</u>
Tetrachloro-m-xylene	75.4	(63 - 128)
Decachlorobiphenyl	80.3	(68 - 130)





**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-004

**Client ID:** B-121 4-6

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** JAH

**Date Sampled:** 04/25/2012

**Time Sampled:** 0825

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Gasoline Range Organics: SW846-8015M					
Gasoline Range Organics: C6-C12		<0.23	0.23	mg/kg	4/30/2012
<u>Surrogate</u>		<u>Percent Recovery</u>		<u>Recovery Limits</u>	
Cumene		90.0		(76 - 122)	



**EAG Workorder** 1204-00365

**EAG ID:** 1204-00365-004

**Client ID:** B-121 4-6

**Client Project:** Former Wilkinson Property

**Matrix:** Solid

**Analyst:** DFM

**Date Sampled:** 04/25/2012

**Time Sampled:** 0825

**Date Received:** 04/27/2012

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Date Analyzed</u>
Total Petroleum Hydrocarbons: SW846-8015M					
Extractable Petroleum Hydrocarbons: C10-C20		<1200	1200	mg/kg	5/02/2012
<b>Extractable Petroleum Hydrocarbons: C20-C34</b>		<b>5400</b>	1200	mg/kg	5/02/2012
Extraction: SW846-3550		Complete			5/01/2012
<u>Surrogate</u>		<u>Percent Recovery</u>		<u>Recovery Limits</u>	
Tricontane		MI		(30 - 138)	





## Affidavit of VAP Certified Laboratory

*[For VAP certified laboratories to attest to "certified data" under OAC 3745-300-13(N) and OAC 3745-300-04(A). Note that Ohio EPA is to receive a legible copy of the CL's affidavit. The entity that received the CL's analytical report under affidavit may retain the CL's affidavit original.]*

State of Ohio                                 )  
County of Lake                               )               ss:

I, Jeffrey Herbert, being first duly sworn according to law, state that, to the best of my knowledge, information and belief:

1. I am an adult over the age of eighteen years old and competent to testify herein.
2. I am employed by EA Group ("the laboratory") as Laboratory Manager. I am authorized to submit this affidavit on behalf of the laboratory.
3. The purpose of this submission is to support a request for a no further action letter or other aspects of a voluntary action, under Ohio's Voluntary Action Program (VAP) as set forth in Ohio Revised Code Chapter 3746 and Ohio Administrative Code (OAC) Chapter 3745-300.
4. EA Group performed analyses for Brownfield Restoration Group for a voluntary action at property known as Former Wilkinson Property.
5. This affidavit applies to and is submitted with the following information, data, documents or reports for the property:

Document ID  
1204-00365

Date of Document  
May 3, 2012

6. EA Group was a VAP certified laboratory pursuant to OAC 3745-300-04 when it performed the analyses referenced herein.

*Revised 5/09, 8/09, 4/11; consistent with OAC 3745-300-04 (10/14/06, and rev. eff. 3/1/09 versions)*

Certified Lab Affidavit Pursuant to OAC 3745-300-13(N)

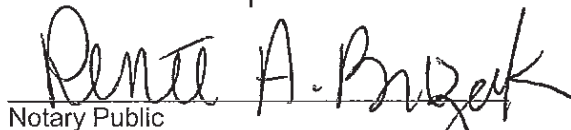


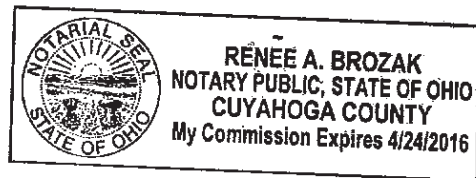
7. All analyses under this affidavit consist of VAP "certified data" as described in OAC 3745-300-04(A) -- unless paragraph b., below, specifies the exceptions:
- a. The laboratory performed the analyses within its current VAP certification. The laboratory was certified for each analyte, parameter group and method used at the time that it performed the analyses. The analyses were performed consistent with the laboratory's standard operating procedures and quality assurance program plan as approved under OAC 3745-300-04.
  - b. Exceptions, if any: None.
- 8 The information, data, documents and reports identified under this affidavit are true, accurate and complete.

Further affiant sayeth naught.

  
Signature of Affiant

Sworn to before me and subscribed in my presence this 3 day of May, 2012.

  
Notary Public



*Revised 5/09, 8/09, 4/11; consistent with OAC 3745-300-04 (10/14/06, and rev. eff. 3/1/09 versions)*

Certified Lab Affidavit Pursuant to OAC 3745-300-13(N)

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica North Canton  
4101 Shuffel Street NW  
North Canton, OH 44720  
Tel: (330)497-9396

TestAmerica Job ID: 240-9368-1  
Client Project/Site: 1530 Commerce

For:  
J.D. Williamson Construction  
441 Geneva Ave.  
Tallmadge, Ohio 44278

Attn: Joel D Williamson

*Patrick O'Meara*

Authorized for release by:  
3/30/2012 4:43:40 PM

Patrick O'Meara  
Project Manager II  
patrick.omeara@testamericainc.com

### LINKS

Review your project  
results through

**TotalAccess**

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**Ask  
The  
Expert**

Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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## Definitions/Glossary

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)



## Case Narrative

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

Job ID: 240-9368-1

Laboratory: TestAmerica North Canton

Narrative

### CASE NARRATIVE

Client: J.D. Williamson Construction

Project: 1530 Commerce

Report Number: 240-9368-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

#### RECEIPT

The samples were received on 03/20/2012; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 22.6 C.

#### POLYCHLORINATED BIPHENYLS (PCBS)

Sample BELT SKIMMER PROD #1 (240-9368-1) was analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA SW-846 Method 8082. The samples were prepared on 03/29/2012 and analyzed on 03/30/2012.

Surrogates are added during the extraction process prior to dilution. When the sample dilution is 5X or greater, surrogate recoveries are diluted out and no corrective action is required.

Sample BELT SKIMMER PROD #1 (240-9368-1)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following samples required a tetrabutylammonium sulfite (TBA) clean-up to reduce matrix interferences caused by sulfur: BELT SKIMMER PROD #1 (240-9368-1). Lot S65830

No other difficulties were encountered during the PCBs analysis. All other quality control parameters were within the acceptance limits.

RELEASED  
DATE 5/24/17  
RIN # 2017-005534  
INITIALS JAW

## Method Summary

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

Method	Method Description	Protocol	Laboratory
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL NC

### Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

## Sample Summary

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-9368-1	BELT SKIMMER PROD #1	Waste	03/20/12 11:00	03/20/12 12:38

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## Detection Summary

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

Client Sample ID: BELT SKIMMER PROD #1

Lab Sample ID: 240-9368-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1260	28000		4900		ug/Kg	5		8082	Total/NA

# Client Sample Results

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

Client Sample ID: BELT SKIMMER PROD #1

Lab Sample ID: 240-9368-1

Date Collected: 03/20/12 11:00

Matrix: Waste

Date Received: 03/20/12 12:38

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		4900		ug/Kg		03/29/12 14:04	03/30/12 10:08	5
Aroclor-1221	ND		4900		ug/Kg		03/29/12 14:04	03/30/12 10:08	5
Aroclor-1232	ND		4900		ug/Kg		03/29/12 14:04	03/30/12 10:08	5
Aroclor-1242	ND		4900		ug/Kg		03/29/12 14:04	03/30/12 10:08	5
Aroclor-1248	ND		4900		ug/Kg		03/29/12 14:04	03/30/12 10:08	5
Aroclor-1254	ND		4900		ug/Kg		03/29/12 14:04	03/30/12 10:08	5
Aroclor-1260	28000		4900		ug/Kg		03/29/12 14:04	03/30/12 10:08	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	90		29 - 173				03/29/12 14:04	03/30/12 10:08	5
DCB Decachlorobiphenyl	72		13 - 185				03/29/12 14:04	03/30/12 10:08	5

## Surrogate Summary

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

### Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Waste

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	TCX2 (29-173)	DCB2 (13-185)
240-9368-1	BELT SKIMMER PROD #1	90	72
LCS 240-38467/7-A	Lab Control Sample	120	94
MB 240-38467/6-A	Method Blank	102	73

#### Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl

# QC Sample Results

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 240-38467/6-A

Matrix: Waste

Analysis Batch: 38511

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 38467

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		1000		ug/Kg		03/29/12 14:04	03/30/12 11:24	1
Aroclor-1221	ND		1000		ug/Kg		03/29/12 14:04	03/30/12 11:24	1
Aroclor-1232	ND		1000		ug/Kg		03/29/12 14:04	03/30/12 11:24	1
Aroclor-1242	ND		1000		ug/Kg		03/29/12 14:04	03/30/12 11:24	1
Aroclor-1248	ND		1000		ug/Kg		03/29/12 14:04	03/30/12 11:24	1
Aroclor-1254	ND		1000		ug/Kg		03/29/12 14:04	03/30/12 11:24	1
Aroclor-1260	ND		1000		ug/Kg		03/29/12 14:04	03/30/12 11:24	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	102		29 - 173				03/29/12 14:04	03/30/12 11:24	1
DCB Decachlorobiphenyl	73		13 - 185				03/29/12 14:04	03/30/12 11:24	1

Lab Sample ID: LCS 240-38467/7-A

Matrix: Waste

Analysis Batch: 38511

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 38467

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor-1016	10000	11200		ug/Kg		112	66 - 149
Aroclor-1260	10000	10000		ug/Kg		100	50 - 155
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
Tetrachloro-m-xylene	120		29 - 173				
DCB Decachlorobiphenyl	94		13 - 185				

## QC Association Summary

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

### GC Semi VOA

#### Prep Batch: 38467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-9368-1	BELT SKIMMER PROD #1	Total/NA	Waste	3580A	
LCS 240-38467/7-A	Lab Control Sample	Total/NA	Waste	3580A	
MB 240-38467/6-A	Method Blank	Total/NA	Waste	3580A	

#### Analysis Batch: 38511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-9368-1	BELT SKIMMER PROD #1	Total/NA	Waste	8082	38467
LCS 240-38467/7-A	Lab Control Sample	Total/NA	Waste	8082	38467
MB 240-38467/6-A	Method Blank	Total/NA	Waste	8082	38467



## Lab Chronicle

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

Client Sample ID: BELT SKIMMER PROD #1

Lab Sample ID: 240-9368-1

Date Collected: 03/20/12 11:00

Matrix: Waste

Date Received: 03/20/12 12:38

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3580A			38467	03/29/12 14:04	AK	TAL NC
Total/NA	Analysis	8082		5	38511	03/30/12 10:08	CV	TAL NC

### Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

## Certification Summary

Client: J.D. Williamson Construction  
Project/Site: 1530 Commerce

TestAmerica Job ID: 240-9368-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica North Canton	California	NELAC	9	01144CA
TestAmerica North Canton	Connecticut	State Program	1	PH-0590
TestAmerica North Canton	Florida	NELAC	4	E87225
TestAmerica North Canton	Georgia	State Program	4	N/A
TestAmerica North Canton	Illinois	NELAC	5	200004
TestAmerica North Canton	Kansas	NELAC	7	E-10336
TestAmerica North Canton	Kentucky	State Program	4	58
TestAmerica North Canton	L-A-B	DoD ELAP		L2315
TestAmerica North Canton	Minnesota	NELAC	5	039-999-348
TestAmerica North Canton	Nevada	State Program	9	OH-000482008A
TestAmerica North Canton	New Jersey	NELAC	2	OH001
TestAmerica North Canton	New York	NELAC	2	10975
TestAmerica North Canton	Ohio VAP	State Program	5	CL0024
TestAmerica North Canton	Pennsylvania	NELAC	3	68-00340
TestAmerica North Canton	USDA	Federal		P330-11-00328
TestAmerica North Canton	Virginia	NELAC Secondary AB	3	460175
TestAmerica North Canton	Washington	State Program	10	C971
TestAmerica North Canton	West Virginia DEP	State Program	3	210
TestAmerica North Canton	Wisconsin	State Program	5	999518190

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

THE LEADER IN ENVIRONMENTAL TESTING

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

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TAL-0018 (1008)

## TestAmerica North Canton Sample Receipt Form/Narrative

Login # : 9368

Client J.D. Williamson

Site Name

By:

(Signature)

Cooler Received on 3/20/12

Opened on 3/20/12

FedEx: 1<sup>st</sup> Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier

Other

TestAmerica Cooler # Foam Box Client Cooler Multiple on Back

Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

## 1. Cooler temperature upon receipt

IR GUN# 1 (CF -2°C) Sample Temp 24.6 °C Corrected Temp 22.6 °C

IR GUN# 4G (CF -1°C) Sample Temp °C Corrected Temp °C

IR GUN# 5G (CF -1°C) Sample Temp °C Corrected Temp °C

IR GUN# 6Y (CF -2°C) Sample Temp °C Corrected Temp °C

## 2. Were custody seals on the outside of the cooler(s)? If Yes Quantity

Yes No

-Were custody seals on the outside of the cooler(s) signed &amp; dated?

Yes No NA

-Were custody seals on the bottle(s)?

Yes No

## 3. Shippers' packing slip attached to the cooler(s)?

Yes No

## 4. Did custody papers accompany the sample(s)?

Yes No

## 5. Were the custody papers relinquished &amp; signed in the appropriate place?

Yes No

## 6. Did all bottles arrive in good condition (Unbroken)?

Yes No

## 7. Could all bottle labels be reconciled with the COC?

Yes No

## 8. Were correct bottle(s) used for the test(s) indicated?

Yes No

## 9. Sufficient quantity received to perform indicated analyses?

Yes No

## 10. Were sample(s) at the correct pH upon receipt?

Yes No NA

## 11. Were VOAs on the COC?

Yes No

## 12. Were air bubbles &gt;6 mm in any VOA vials?

Yes No NA

## 13. Was a trip blank present in the cooler(s)?

Yes No

Contacted PM Date by via Verbal Voice Mail Other  
Concerning

## 14. CHAIN OF CUSTODY &amp; SAMPLE DISCREPANCIES

High temp ok straight from field

## 15. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.

Sample(s) were received in a broken container.

Sample(s) were received with bubble &gt;6 mm in diameter. (Notify PM)

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14  
15

## Login Sample Receipt Checklist

Client: J.D. Williamson Construction

Job Number: 240-9368-1

Login Number: 9368

List Number: 1

Creator: Maddux, Ann

List Source: TestAmerica North Canton

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	22.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



American Testing Technologies, Inc.

03/17/2012

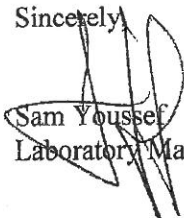
J. D. Williamson Construction Co., Inc.  
Attn: Joel D. Williamson  
441 Geneva Ave.  
Tallmadge, OH 44278

Report No 031612-18

Enclosed are the results of the sample(s) submitted to our laboratory on 03/16/2012. All analyses were performed according to our laboratory's quality assurance program. All sample results are reported on an "as-received" wet basis unless otherwise noted. The test results meet requirements of the NELAP standards except as noted. Results apply only to the items submitted to the laboratory for analysis. Pursuant to NELAP, this report may not be reproduced except in full, and with written approval from the laboratory.

If you have any questions please contact the laboratory manager at 330-634-9906 or via email at [samy@americantestingtechnologies.com](mailto:samy@americantestingtechnologies.com)

Sincerely,



Sam Youssef  
Laboratory Manager

Page 1 of 2

SL- Test performed by an approved subcontract laboratory  
NC- Analyses not currently NELAC certified

American Testing Technologies, Inc.'s responsibility for the above analysis is limited to the invoice amount.



American Testing Technologies, Inc.

J. D. Williamson Construction Co., Inc.  
Attn: Joel D. Williamson  
441 Geneva Ave.  
Tallmadge, OH 44278

Date Received: 03/16/2012  
Date Reported: 03/17/2012  
Date Collected: 03/16/12  
Time Collected: 11:30  
Date of Analysis: 03/16/2012  
Method: 8082

**Certificate of Analysis**

**Laboratory ID**

031612-18


**Client ID**

Belt Skimmer Product Sample

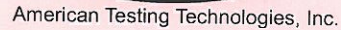
**PCBs**

6.0 ppm

Final report reviewed by:

  
\_\_\_\_\_  
Laboratory Manager





Website: [www.AmericanTestingTechnologies.com](http://www.AmericanTestingTechnologies.com)  
Toll Free: 877-634-9906 Phone: (330) 634-9906  
Fax: (330) 634-9908

**CLIENT'S FIELD COPY**



American Testing Technologies, Inc.

J. D. Williamson Construction Co., Inc.  
Attn: Joel D. Williamson  
441 Geneva Ave.  
Tallmadge, OH 44278

Date Received: 03/16/2012  
Date Reported: 03/17/2012  
Date Collected: 03/16/12  
Time Collected: 11:30  
Date of Analysis: 03/16/2012  
Method: 8082

**Certificate of Analysis**

**Laboratory ID**

031612-18

**Client ID**

Belt Skimmer Product Sample

**PCBs**

6.0 ppm

Final report reviewed by:

  
Laboratory Manager





## ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

**American Testing Technologies, Inc.**  
1350 Home Avenue Akron, OH 44310

Website: [www.AmericanTestingTechnologies.com](http://www.AmericanTestingTechnologies.com)  
Toll Free: 877-634-9906 Phone: (330) 634-9906  
Fax: (330) 634-9908

PROJECT REFERENCE		PROJECT NO.		PROJECT LOCATION (STATE)		MATRIX TYPE		REQUIRED ANALYSIS										PAGE		OF			
PROJECT MANAGER		P.O. NUMBER		CONTRACT NO.		COMPOSITE (C) OR GRAB (G) INDICATE AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (OIL, SOLVENT, ...)		<div>4</div> <div>2</div> <div>0</div> <div>2</div> <div>1</div> <div>PRESERVATIVE</div>										STANDARD REPORT DELIVERY				<input type="radio"/>	
CLIENT (SITE)		CLIENT PHONE		CLIENT FAX														DATE DUE _____					
CLIENT NAME		CLIENT E-MAIL																EXPEDITED REPORT DELIVERY (SURCHARGE)				<input type="radio"/>	
CLIENT ADDRESS																		DATE DUE _____					
SAMPLE		DATE		TIME		SAMPLE IDENTIFICATION		NUMBER OF CONTAINERS SUBMITTED										REMARKS					
3/16/12		11:30				Belt Skinner Product Sample																	
RELINQUISHED BY: (SIGNATURE)		DATE		TIME		RELINQUISHED BY: (SIGNATURE)		DATE		TIME		RELINQUISHED BY: (SIGNATURE)		DATE		TIME							
EMPTY CONTAINERS														3/16/12		1:41 PM							
RECEIVED BY: (SIGNATURE)		DATE		TIME		RECEIVED BY: (SIGNATURE)		DATE		TIME		RECEIVED BY: (SIGNATURE)		DATE		TIME							
EMPTY CONTAINERS														3/16/12		1:41 PM							
RECEIVED FOR LABAORATORY BY: (SIGNATURE)		DATE		TIME		CUSTODY INTACT		CUSTODY SEAL NO.		A.T.I. LOG NO.		LABORATORY REMARKS											
B. J. f		3/16/12		1:41		YES <input type="radio"/> NO <input type="radio"/>				031612-18													

**ORIGINAL - RETURN TO LABORATORY WITH SAMPLE(S)**

**ATTACHMENT E**  
Standard Operating Procedures (SOPs)

# **STANDARD OPERATING PROCEDURE**

## **SOIL SAMPLING**

### **1.1 Equipment needed**

- Bound field logbook.
- Sample tags.
- Appropriate sample containers and labels.
- Terra Core samplers and related equipment.
- Quart/Gallon Freezer Ziplock® Bags
- Insulated cooler and ice.
- Decontamination equipment and supplies.
- Personal protective clothing and equipment as required by the site-specific HASP.
- Nitrile or latex sampling gloves.
- PID/FID.
- Stainless steel or aluminum trays or bowls.
- Stainless steel shovels, trowels, spoons, or spatulas.
- Hand auger. (Optional for shallow sampling)

### **1.2 Sample screening and interval choice procedures**

A PID will also be used to perform field screening of soil and sediment samples in order to assist in the selection of samples to be submitted for laboratory analysis. Samples from borings will be selected for laboratory analysis based on the following:

- A sample from the 0 to 2 foot interval will be submitted from every boring, and
- A sample from the soil interval with the highest PID reading will be submitted. If the PID does not detect any volatile organic vapors, then the sample interval will be chosen as follows (in order of priority):
  1. Obvious discoloration or other visible signs of contamination; or
  2. If no visible signs of contamination are evident, a sample from the zone directly above the water table will be submitted; or
  3. A sample from a depth corresponding to the zone in the subsurface expected to contain the greatest concentration of contaminants will be submitted. This selection will be based on the type of release and the history of the area being investigated and will be determined by the BRG Field Team Leader and Field Staff.

### **1.3 Soil Boring Sample Procedures**

As a general rule, soil samples for VOC analysis (and GRO) should be obtained as soon as possible once the soil is removed from the ground, and as permissible, from an undisturbed portion of the soil core in order to prevent loss of VOCs. Except for VOCs, soil intervals will be homogenized for all analyses to help ensure that representative soil samples are collected. Soil samples for VOCs will be taken using sampling devices suitable for 5035 analyses (Terra Core® or equivalent). The workflow to sample is:

1. Open the sampler (split spoon or MacroCore tube) and immediately scan the sample with the PID/FID for initial atmospheric reading.
2. Take a sample for VOC analysis according to the protocol below (5035 Sampling for VOCs), and label the vials. Put the sample in a field cooler with ice.
3. Immediately following sample collection for VOCs, place a portion of the sample into a 1 quart freezer bag and allow to equilibrate for 15 minutes at ambient air temperature. As dictated by sample volume recovery, fill the freezer bags approximately half-full so that a uniform amount of soil is collected for each sample to insure relative comparability of PID screening results.
4. Using the PID probe, puncture the bag to measure the soil vapor headspace.
5. Record the reading on the field log next to the appropriate depth.
6. Observe and record the lithology of the sample.
7. Put the remaining sample in a zip-lock bag and label the bag with the boring number and depth using a waterproof marker. Put the sample bags in a cooler with ice if weather dictates.
8. Continue the boring and sampling. At the end of the boring, review the lithology and PID log and determine which sample interval(s) to send for analysis. After ensuring that the selected sample has been well homogenized within the bag, use the remaining portion of the bagged sample from that interval to fill the appropriate containers.
9. Make sure that every container is properly labeled, fill out the COC, and update the field log and notebook.

#### **1.3.1 Sample Collection Order**

The collection order is as follows:

1. Volatile Organic Compounds (VOCs)
2. Semi-volatile Organic Compounds (SVOCs)
3. TPH, GRO and DRO

4. Asbestos (if necessary)
5. PCBs
6. Metals
7. Wet Chemistry Parameters

#### **1.4 Surface Soil and Non-Submerged Sediment Grab Sampling Procedure**

Soil and non-submerged sediment samples will be collected using stainless steel and/or Teflon-lined scoops, trowels, shovels, spoons, or spatulas. A hand auger will be used for samples collected at depth. Terra Core-type samplers may also be used to collect samples for VOC analyses when grab sampling soil and sediment samples.

#### **1.5 Soil and Non-Submerged Sediment Sampling Steps**

1. Follow the sampling pattern outlined in the SAP.
2. Carefully remove stones, vegetation, snow, etc., from the boring location surface.
3. Assess deeper soil samples by drilling a hand auger to the desired depth and removing the soils from the auger.
4. The requirements for collecting grab samples of soil are as follows:
  - a) Collect VOC aliquots into properly preserved containers as soon as possible after obtaining the sample.
  - b) Following VOC sample collection (as necessary), ensure sample homogenization by mixing the sample in a freezer bag or stainless steel bowl and use a clean stainless steel trowel or spoon to collect sufficient material to fill the sample containers.
  - c) Fill the sample containers, removing stones, twigs, grass, etc., from the sample. Additional sample containers may be required to obtain enough material for a minimum of 30 percent solids.
  - d) Immediately secure the caps on the sample container.
  - e) Label container with the appropriate information. NOTE: Container may be labeled prior to sample collection.
  - f) Record samples (e.g., sample ID, location, depth, method, etc.) in the bound field logbook.
  - g) Pack sample in cooler with ice. The only preservation required for soil, sediment and sludge samples is to cool them to 4 degrees Celsius. A small plastic temperature blank will be filled with water and placed in the cooler with the samples. The

temperature of the samples will be determined at the laboratory by measuring the temperature of the temperature blank.

- h) Use decontaminated sampling equipment at each sample location to minimize cross-contamination.
- i) In the event that a duplicate sample is collected: duplicate the sampling procedure for 5035 analysis if used for the initial sample. For other parameters, place sufficient sample quantity in a stainless steel bowl and mix. Split into duplicate sampling jars.

## **1.6 Test Pit Sampling Procedure**

Soils from the test pit will be screened with a PID in the bucket of the excavator immediately after it is withdrawn from the pit.

Soil samples will be collected as soon as possible after the excavator deposits the soil outside of the pit, using stainless steel and/or Teflon-lined scoops, trowels, shovels, spoons, or spatulas. The collection order and sample collection steps are the same as with the methods described in Section 1.5 above.

### **1.6.1 Test Pit Sample screening and interval choice procedures**

A PID will also be used to perform field screening of soil samples in order to assist in the selection of samples to be submitted for laboratory analysis. The following criteria may be used for more than one location along the length of the test pit. The determination of sampling more than one zone shall be based upon separation of more than one area of interest within the test pit and obvious separation between the areas. Samples from test pits will be selected for laboratory analysis based on the following:

- A sample from the soil interval with the highest PID reading will be submitted. If the PID does not detect any volatile organic vapors, then the sample interval will be chosen as follows (in order of priority):
  1. Obvious discoloration or other visible signs of contamination; or
  2. If no visible signs of contamination are evident, a sample from the zone directly above the water table will be submitted; or
  3. If man-made structures are encountered in the test pit a sample may be taken from material in proximity to the structure; or
  4. A sample from a depth corresponding to the zone in the subsurface expected to contain the greatest concentration of contaminants will be submitted. This selection will be based on the type of release and the history of the area being



investigated and will be determined by the BRG Field Team Leader and Field Staff.

## **1.7 Sample Tracking**

Each sample shipment shall be subjected to a tracking program. This program is designed to ensure the integrity of each sample from the time of collection until the samples are delivered to the laboratory for analysis. The program consists of:

- Sample labels;
- Field logbook; and
- Chain-of-Custody Forms.

### **1.7.1 Sample Labels**

Waterproof sample labels shall be provided by the laboratory and shall be used to prevent mis-identification of the samples. Each sample label shall be completed using waterproof ink and shall then be firmly affixed to the sample. The sample label shall include the following information:

- Client Name;
- Project Number;
- Sample Identification Number (well #) (must be filled out in the field by the sampling team);
- Initials of person collecting the sample (must be filled out in the field by the sampling team);
- Date and time of sample collection (must be filled out in the field by the sampling team);
- Analysis to be performed on the sample; and
- Preservative used (if any).

### **1.7.2 Field Logbook / Sample Sheets**

Each sample shall be noted on the field sampling sheets *or* in the field logbook at the time of collection. The field logbook shall be a bound book with numbered pages. Each day's entry shall be signed and dated by the individual making the entry. The sampling form or field logbook shall contain the following information:

- Identification of the sample location;
- Collection method and rate as applicable;
- Sample identification (must match sample tag);
- Notation of QA/QC sample type and corresponding sample identification;

- Type of container;
- Preservatives used;
- Physical description of sample;
- Field observations of sampling event;
- Name of sample collector(s); and
- Climatic conditions during sampling.

### **1.7.3 Chain-of-Custody Record**

In order to establish the documentation necessary to trace sample possession from the time of collection, a chain-of-custody record shall be prepared. The chain-of-custody record shall accompany the samples from the time of collection until they are delivered to the laboratory for analysis. When the samples are delivered to the receiving laboratory, the laboratory personnel logging in the samples should complete the next signature, date, and time. From this point, the laboratory shall maintain internal tracking forms. The receiving laboratory's personnel shall document the internal temperature of the sample cooler(s) on the chain of custody. The chain-of-custody record shall identify the following:

- Sample number;
- Date and time of collection;
- Sample type;
- Number of containers;
- Parameters requested for analysis;
- Signature of person(s) involved in chain of possession;
- Date and time of possession transfer; and
- Method of sample transport.

This chain-of-custody information shall be maintained on a standardized form.

### **1.7.4 Sample Packaging and Shipment**

All sample containers will be placed in a strong-outside shipping container (cooler with hinges and latch intact). The following outlines the packaging procedures that will be followed.

1. When ice is used, pack it in zip-locked plastic bags. Seal the drain plug of the cooler with fiberglass tape to prevent melting ice from leaking out of the cooler, and line the cooler with a large plastic trash bag.
2. The bottom of the cooler should be lined with bubble wrap to prevent breakage during shipment.

3. Check screw caps for tightness and, if not full, mark the sample volume level of liquid samples on the outside of the sample bottles with indelible ink.
4. Secure bottle/container tops with clear tape and custody seal all container tops. For VOC samples, the seal will be wrapped around the cap.
5. Affix sample labels onto the containers with clear tape.
6. Wrap all glass sample containers in bubble wrap to prevent breakage.
7. Any samples proposed to be shipped containing hazardous levels of COCs must comply with 49 CFR 173.4. If the samples are known to contain hazardous levels of COCs, BRG will be responsible for notifying the transporter and the receiving laboratory of the hazardous disposition of the samples.
8. Enclose the appropriate COC(s) in a zip-lock plastic bag and place on top of the samples within the cooler.
9. Ice used to cool samples will be double sealed in Ziploc plastic bags and placed on top and around the samples to chill them to the correct temperature.
10. Fill empty space in the cooler with bubble wrap or other packing material to prevent movement and breakage during shipment.
11. Each ice chest will be securely taped shut with fiberglass strapping tape, and custody seals will be affixed to the front, right and back of each cooler.
12. Samples shall be shipped from the field back to the analytical laboratory either by hand delivery or utilizing an overnight courier service.
13. Duplicate samples will be preserved, packaged, and sealed in the same manner as other samples of the same matrix. A separate sample number and station number will be assigned to each duplicate, and it will be submitted blind to the laboratory.

The field crew shall contact the laboratory each time samples are sent to identify the samples being sent and the transportation carrier along with the shipping identification number.

ENVIRONMENTAL SCIENCE CORP.  
STANDARD OPERATING PROCEDURES

Number: 330343  
Analysis: PCBs  
Date/rev: 4/24/12 R9  
Page 1 of 34

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(see Revision History at the end of this document for more information)

TITLE: POLYCHLORINATED BIPHENYLS (PCBS) BY GAS CHROMATOGRAPHY (SOIL, WATER & OIL) (EPA METHODS 608, 8082, & 8082A, SM 6431B)

SOP NUMBER: 330343

Prepared by: Nick Parker/Nathan Wyeth

Reviewed by: Chris Johnson/Dixie Marlin

This document bears a watermark in the bottom right hand corner. The watermark is an insignia of the document's approval. The signed original is on file in the Reg. Affairs Office.

Department Manager

QA Department

## 1.0 SCOPE AND APPLICATION

**NOTE:** EPA Method 608 includes the analysis of pesticides, for direction regarding pesticide analysis using EPA method 608, see ESC SOP# 330344, *Chlorinated Pesticides by GC*.

- 1.1 This standard operating procedure describes a gas chromatographic method for the determination of polychlorinated biphenyls (PCBs) as Aroclors. It is used for waste samples, waters, soils, sediments, and other solid samples. Compounds analyzed by this method and their typical reporting limits are found below (subject to change).

Analyte	CAS No./ IUPAC No.:	Soil mg/kg	Water mg/L
Aroclor 1016	12674-11-2	0.017	0.0005
Aroclor 1221	11104-28-2	0.017	0.0005
Aroclor 1232	11141-16-5	0.017	0.0005
Aroclor 1242	53469-21-9	0.017	0.0005
Aroclor 1248	12672-29-6	0.017	0.0005
Aroclor 1254	11097-69-1	0.017	0.0005
Aroclor 1260	11096-82-5	0.017	0.0005
Aroclor 1262*	37324-23-5	--	0.0005
Aroclor 1268*	11100-14-4	--	0.0005

\* See section 13.3.

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(see Revision History at the end of this document for more information)

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TITLE: POLYCHLORINATED BIPHENYLS (PCBS) BY GAS CHROMATOGRAPHY (SOIL, WATER & OIL) (EPA METHODS 608, 8082, & 8082A, SM 6431B)

---

- 1.2 Aroclors are multi-component mixtures. When samples contain more than one Aroclor, a higher level of analyst expertise is required to attain acceptable levels of qualitative and quantitative analysis. The same is true of Aroclors that have been subjected to environmental degradation ("weathering") or degradation by treatment technologies. Such weathered multi-component mixtures may have significant differences in peak patterns than those of Aroclor standards.
- 1.3 Quantitation of PCBs as Aroclors is appropriate for many regulatory compliance determinations, but is particularly difficult when the Aroclors have been weathered by long exposure in the environment.
- 1.4 A Method Detection Limit (MDL) study must be completed at least annually or more frequently if major instrumentation changes occur. MDLs are performed based on ESC SOP #030206. Updated MDL records are filed and stored in a central location within the department.
  - 1.4.1 Limit of Detection (LOD) and Limit of Quantitation (LOQ) studies are completed at the frequency required by the TNI standard per the procedure identified in the ESC SOP #030206, *Method Detection Limits (MDL) and Limits of Detection (LOD)*. Should the procedure be utilized for DOD support; then the frequency of these studies must meet the requirements of the current DOD QSM.

## 2.0 METHOD SUMMARY AND DEFINITIONS

- 2.1 A measured volume or weight of sample (approximately 100mL or 1L for liquids, 2g to 30g for solids) is extracted using the appropriate matrix-specific sample extraction technique.
- 2.2 Aqueous samples are extracted at neutral pH with methylene chloride using EPA method 3510C (separatory funnel) or other appropriate technique. Reduced volume (RV) extraction using EPA method 3510C that requires a smaller volume (usually 100mL) of field sample is also available for use where applicable. See section 13.4 of this procedure and ESC SOP #330702B. The resulting extracts are exchanged in Hexane for final solvent and concentrated using ESC SOP# 330708, *Buchi Syncore Concentration System*.
- 2.3 Solid samples are extracted with methylene chloride using EPA methods 3550C (sonication) or 3546 (microwave). The extract is exchanged in Hexane for final solvent.
- 2.4 Oily matrices are subjected to waste dilution according to EPA method 3580A.

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(see Revision History at the end of this document for more information)

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TITLE: POLYCHLORINATED BIPHENYLS (PCBS) BY GAS CHROMATOGRAPHY (SOIL, WATER & OIL) (EPA METHODS 608, 8082, & 8082A, SM 6431B)

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- 2.5 Extracts for PCB analysis may be subjected to a sulfuric acid/potassium permanganate cleanup (EPA Method 3665A), Florisil Cleanup (EPA Method 3620C), silica gel cleanup (EPA Method 3630C), and Sulfur Cleanup (EPA Method 3660B). These cleanup techniques remove many single component organochlorine/organophosphorus pesticides, sulfur and other non-target analytes that can interfere with the identification and quantitation of PCBs; therefore, cleaned extracts for analysis using Method 8082 are not applicable to the analysis of those compounds (see EPA Method 8081).
- 2.6 Routinely, an internal standard is added to the sample extract then the extract is injected into a gas chromatograph equipped with a capillary column and an electron capture detector; however in cases where there is an obvious interferent co-eluting with the internal standard peak, extracts without internal standard are analyzed and quantitation using external calibration is performed.
- 2.7 The chromatographic data may be used to determine the nine Aroclors in Sec. 1.1 or total PCBs.
- 2.8 Initial Calibration Verification (ICV)/Continuing Calibration Verification (CCV) – Standards prepared from the primary source that are analyzed at the beginning of each workgroup, and following every 20 samples throughout the run to confirm that the instrument maintains calibration stability within acceptance criteria.
- 2.9 Initial Demonstration of Capability (IDOC) - A demonstration of capability (DOC) must be made prior to using any analytical method and any time there is a change in instrument type, personnel or testing method. Such performance must be documented and the four preparation batches following the change in personnel must not result in the failure of any batch acceptance criteria, e.g., method blank, laboratory control sample, etc. or the demonstration of capability must be repeated. See also Continuing Demonstration of Capability (CDOC).
- 2.10 Laboratory Control Sample (LCS) / Laboratory Control Sample Duplicate (LCSD) – Duplicate aliquots of a control sample of known in composition. This sample is prepared from a source that is different from the stock used to prepare the initial and continuing calibration standards. LCS/LCSD are analyzed exactly like a sample and the purpose is to determine whether the methodology is in control and whether the laboratory is capable of making accurate and precise measurements. Method precision can be determined using the results of the LCS/LCSD analysis.
- 2.11 Matrix Spike (MS) / Matrix Spike Duplicate (MSD) - Two aliquots of a field sample (water or soil) spiked with known quantities of specific compounds and subjected to the entire analytical procedure in order to indicate the appropriateness of the method for the matrix by measuring recovery. Method precision can be determined using the results of the MS/MSD analysis, but are subject to matrix variability issues not present in the LCS/LCSD pair.

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- 2.12 Method Blank - A clean matrix consisting of all reagents used in the analytical procedure. The method blank is used to define the level of laboratory background and reagent contamination.
- 2.13 Method Detection Limit (MDL) - The minimum concentration of a substance that can be analyzed with 99% confidence that the analyte concentration is greater than zero.
- 2.14 Reporting Limit (RL) - Also see Practical Quantitation Limit (PQL). Routinely the reporting limit is the lowest standard of the calibration curve. Technically, the reporting limit is the lowest level that can be reliably achieved within the established acceptance criteria of precision and accuracy during routine laboratory operating conditions.
- 2.15 Practical Quantitation Limit (PQL) - The default reporting limit when other reporting limits are not specified by the client or project. The PQL is usually a factor of 3-10 times the MDL.
- 2.16 Second Source Calibration Verification (SSCV) - A mid-point or low standard made from a secondary standard that is not used to construct the calibration curve. The SSCV is used to represent the calibration accuracy of the instrument and must perform within method stated criteria.
- 2.17 Internal Standard (ISTD) - Analytes not expected to occur naturally in field samples that are spiked to provide a consistent basis for use in internal calibration models.
- 2.18 Internal Calibration - Internal standard calibration involves the comparison of instrument responses from the target compounds in the sample to the responses of specific spikes added to the sample or sample extract prior to injection.
- 2.19 Response Factor (RF) - The ratio of the peak area (or height) of the target compound in the sample or sample extract to the peak area (or height) of the relevant internal standard in the sample or sample extract.
- 2.20 Relative Response Factor (RRF) - The Response Factor (RF) calculated relative to the response factor of the internal standard.
- 2.21 Sample Extraction - A sample of a known volume or weight is prepared for analysis by removing soluble substances using solvent.
- 2.22 Surrogate - A compound, similar to the target analytes in chemical composition and behavior, but not expected to occur naturally in field samples. Analytes are spiked by preparation/analytical personnel to assess sample extraction and analytical efficiency in each individual field sample.

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- 2.23 Elution - The order of emergence of chemicals from the column of a chromatograph. The chemicals then typically flow into a detector of some type. Predicting and controlling the order of elution is a key aspect of column chromatographic methods and can be modified using instrument operating conditions, column selections, etc.
- 2.23.1 Co-elution – Peaks that are not distinctly separated or resolved by a chromatograph. Co-elution is problematic when peaks share primary and secondary mass ions making accurate quantitation questionable.
- 2.24 Retention Time – The expected time that it takes for a particular analyte to pass through the system (from the column inlet to the detector) under set conditions.
- 2.25 External Calibration - External standard calibration involves comparison of instrument responses from the sample to the responses from the target compounds in the calibration standards. Sample peak areas (or peak heights) are compared to peak areas (or heights) of the standards. The ratio of the detector response to the amount (mass) of analyte in the calibration standard is defined as the calibration factor (CF).
- 2.26 Calibration Factor (CF) - The ratio of the detector response (peak areas or peak heights) to the amount (mass) of analyte in the calibration standard.
- 2.27 Continuing Demonstration of Capability (CDOC) – At least annual verification of analyst continued ability to perform method acceptably.
- 2.28 Reporting Limit Verification (RLV) – A standard analyzed following initial calibration/calibration verification at or below the analyte concentration of the routine reporting level. It is analyzed per regulatory/method requirements for drinking water analyses and various other state/national regulatory programs to verify the accuracy of field sample results at the reporting level.
- 2.29 Limit of Detection (LOD) - A laboratory's estimate of the minimum amount of an analyte in a given matrix that an analytical process can reliably detect in their facility. The validity of the LOD shall be verified by detection of the analyte(s) in a spiked clean matrix sample in each quality system matrix. This sample shall contain the analyte at no more than 3X the MDL for single analyte tests and 4X the MDL for multiple analyte tests. This verification shall be performed on every instrument that is to be used for analysis of samples and reporting of data. The samples used for this verification must be prepared and analyzed through all steps in the analytical process used for client samples.

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- 2.30 Limit(s) of Quantitation (LOQ) - The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The validity of the LOQ shall be verified by successful analysis of a spiked clean matrix sample containing the analytes of concern in each quality system matrix at 1 to 2 times the claimed LOQ. A successful analysis is one where the recovery of each analyte is within the laboratory established method acceptance criteria or client data quality objectives for accuracy. The samples used for this verification must be prepared and analyzed through all steps in the analytical process used for client samples.

### 3.0 HEALTH AND SAFETY

- 3.1 The toxicity or carcinogenicity of each reagent used in the laboratory has not been fully established. Each chemical should be regarded as a potential health hazard and exposure to these compounds must be as low as reasonably achievable. Each laboratory is responsible for maintaining a current awareness file of OSHA regulations regarding the safe handling of the chemicals specified in this method. A reference file of material data handling sheets should also be made available to all personnel involved in the chemical analysis. Specifically, concentrated nitric and hydrochloric acids present various hazards and are moderately toxic and extremely irritating to skin and mucus membranes. Use these reagents in a fume hood whenever possible and if eye or skin contact occurs, flush with large volumes of water. Always wear safety glasses or a shield for eye protection, protective clothing and observe proper mixing when working with these reagents.
- 3.2 Many of the compounds determined by this methodology have been identified as known or putative carcinogens in man and/or animals. Exposure to these compounds must be reduced to a minimum. Neat standards should be handled in a fume hood. The analyst must use gloves to minimize the possibility of trans-dermal adsorption of these compounds.
- 3.3 Since the electron capture detector is a non-destructive detector, effluent from the gas chromatograph must be vented through an adsorption trap. Large quantities of the dichloromethane extraction solvent should be handled in the fume hood.
- 3.4 Wear safety glasses, gloves, and laboratory coat to protect against physical contact with samples that contain potentially hazardous chemicals.

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#### 4.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

- 4.1 All samples must have been collected using a sampling plan that addresses the considerations of this method.
- 4.2 The sample containers must be glass or Teflon and have screw caps with Teflon-lined septa. Sample containers must be filled with care to prevent any portion of the collected sample contacting the sampler's gloves, thus causing possible contamination. Samples must not be collected or stored in the presence of exhaust fumes. If the sample contacts the sampler (e.g. if an automatic sampler is used), run organic-free reagent water through the sampler and utilize the rinsate as a field blank.
- 4.3 If residual chlorine is present, water samples are preserved with 3mL of 10% sodium thiosulfate per gallon and cooled to  $4 \pm 2^{\circ}\text{C}$ . Water samples are collected in a 1L amber bottle with Teflon lined caps and must be extracted within 365 days of collection and analyzed within 40 days following the extraction.
- 4.4 Soils are collected in wide mouth jars with Teflon lined caps and are cooled to  $4 \pm 2^{\circ}\text{C}$  upon collection. Soils must be extracted within 365 days of collection and analyzed within 40 days following extraction.
- 4.5 All analytical glassware must be cleaned according to SOP No: 030701, *Glassware Cleaning*.
- 4.6 Samples submitted for analysis that do not meet the requirements contained within this section must be addressed before performing the logging process within the laboratory. In some cases, exceeding the appropriate preservation and storage criteria can cause significant bias in the resulting data. Clients may need to resubmit samples where the conditions during shipment cause uncertainty regarding sample integrity. If samples do not meet the requirements for preservation, sampling, shipment and storage and the client approves the completion of the analytical process, sample results can be qualified and possible bias is narrated per the ESC SOP# 030201, *Data Handling*.

**STATE NOTE:** All samples from North Carolina must be extracted within 14 days of collection. There are no exceptions.

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## 5.0 INTERFERENCES

- 5.1 Interferences co-extracted from the samples vary considerably from matrix to matrix. While general cleanup techniques are referenced or provided as part of this method, unique samples may require additional cleanup approaches to achieve desired degrees of discrimination and quantitation. Sources of interference in this method can be grouped into three broad categories.
- 5.1.1 Contaminated solvents, reagents, or sample processing hardware.
- 5.1.2 Contaminated GC carrier gas, parts, column surfaces, or detector surfaces.
- 5.1.3 Compounds extracted from the sample matrix to which the detector will respond.
- 5.2 Interferences by phthalate esters introduced during sample preparation can pose a major problem in PCB determinations.
- 5.2.1 Common flexible plastics contain varying amounts of phthalate esters that are easily extracted or leached from such materials during laboratory operations. Interferences from phthalate esters can best be minimized by avoiding contact with any plastic materials and checking all solvents and reagents for phthalate contamination.
- 5.2.2 Exhaustive cleanup of solvents, reagents and glassware may be required to eliminate background phthalate ester contamination.
- 5.2.3 Phthalate esters can be removed through the use of Method 3665A (sulfuric acid/permanganate cleanup).
- 5.3 Cross-contamination of clean glassware routinely occurs when plastics are handled during extraction steps, especially when solvent-wetted surfaces are handled. Glassware must be scrupulously cleaned. Clean all glassware as soon as possible after use by rinsing with the last solvent used. Detergent washing with hot water and rinses with tap water and organic-free reagent water follow. Drain the glassware, and dry it in an oven at 130°C for several hours, or rinse with methanol and drain. Store dry glassware in a clean environment.

**NOTE:** Oven-drying of glassware used for PCB analysis can increase contamination because PCBs are readily volatilized in the oven and spread to other glassware. Therefore, exercise caution and do not dry glassware from samples containing high concentrations of PCBs with glassware that may be used for trace analyses.

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- 5.4 Elemental sulfur (S) is readily extracted from soil samples and may cause chromatographic interferences in the determination of PCBs. Sulfur can be removed using EPA Method 3660B. Other non-target contaminants can be cleaned from extracts using EPA Methods 3665A, 3620C, or 3630C. See the relevant ESC SOPs for more information regarding the use and procedure for these cleanup methods.

## 6.0 EQUIPMENT AND SUPPLIES

### 6.1 Instrumentation (equivalent substitutions may be made)

<b>Instrument name:</b>	<b>SVGC #18</b>	<b>SVGC #28</b>
Use (method #'s):	8082, 608	8082, 608
Model #:	Agilent 6890	Agilent 7890
Column (type, brand, size):	STX-CLPesticides 30m x 0.32mm x 0.5um, STX-CLPesticides II 30m x 0.32mm x 0.25um	STX-CLPesticides 30m x 0.32mm x 0.5um, STX-CLPesticides II 30m x 0.32mm x 0.25um
Detector:	Dual Micro ECD	Dual micro ECD
Software name and version:	EnviroQuant Chemstation G1701DA	EnviroQuant Chemstation G1701EA
Software version:	D.00.01.27	E.02.00
Sample introduction system:	HP 7683 AS	Agilent 7693 AS
Computer name:	SVCOMP	SVCOMPAT
Computer brand, and model #:	HP Compaq	HP Compaq
Gases used (grade and supplier):	N2 – Zero Grade/He	N2 – Zero Grade/He

- 6.2 Vials 10 - 15mL with Teflon lined screw caps
- 6.3 Syringes - Hamilton Gastight or equivalent: 1mL, 250µL, 100µL, 10µL
- 6.4 40mL vials with Teflon lined caps
- 6.5 9" VWR Disposable Pasteur Pipette, or equivalent
- 6.6 10mL Pyrex Disposable Pipette, or equivalent
- 6.7 1.8mL Wheaton ABC Vials with Teflon rubber lined caps or equivalent
- 6.8 10mL Pyrex Volumetric Flasks - Class "A" or equivalent.

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## 7.0 REAGENTS AND STANDARDS

7.1 All reagents and standards must be recorded in the appropriate preparation log and assigned a unique number. See SOP 030203, *Reagent Logs and Records*, and SOP 030230, *Standard Logger*. Additional information regarding reagent preparation can be found in the Standards Logger (Tree) digital archive system. All spiking solutions and surrogate standard solutions should be replaced at least every 6 months, or sooner if a problem is detected unless otherwise noted.

7.2 Pesticide grade chemicals are used in all tests.

**NOTE:** Store the standard solutions (stock, composite, calibration, internal, and surrogate standards) according to manufacturer's guidance. Routinely, store PCB standard and spiking solutions at <6°C in polytetrafluoroethylene (PTFE)-sealed containers in the dark. When a lot of standards is prepared, it is recommended that aliquots of that lot be stored in individual small vials for protection from degradation and possible contamination.

7.3 Aroclor stocks, working and calibration standards - The laboratory working spike standard is made using 500uL, or 2.5uL for RV of a 200ug/mL Pesticides Surrogate Standard Spiking Solution (Ultra Scientific Cat# ISM-320) and 100uL, or 0.5uL for RV, each of Aroclor 1016 & 1260 at 1000ug/mL. The final volume is 10mL in Hexane and the final concentration is 10ppm and 50ppb for RV. Stock standards for each Aroclor are received at 1.0mg/mL and are diluted as follows for calibration working standards. Equivalent substitutions of purchased standards and calibration standard levels may be made.

- PCB 1016 - AccuStandard Cat# C-2165-H-10x
- PCB 1260 - AccuStandard Cat# C-2605-H-10x
- PCB 1221 - AccuStandard Cat# C-2215-H-10x
- PCB 1232 - AccuStandard Cat# C-2325-H-10x
- PCB 1242 - AccuStandard Cat# C-2425-H-10x
- PCB 1248 - AccuStandard Cat# C-2485-H-10x
- PCB 1254 - AccuStandard Cat# C-2445-H-10x
- PCB 1262 - AccuStandard Cat# C-262S-H-10X
- PCB 1268 - AccuStandard Cat# C-268S-H-10X

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Calibration standards are produced using this solution at the concentrations below. Also see section 13.2.

Compound	Std1 µg/mL	Std2 µg/mL	Std3 µg/mL	Std4* µg/mL	Std5 µg/mL	Std6 µg/mL
Amount of Intermediate added (uL)	50uL	100uL	250uL	500uL	750uL	1000uL
Final Volume (mL)	1mL	1mL	1mL	1mL	1mL	1mL
<b>Analyte Concentrations</b>						
1016	.05ppm	.10ppm	.25ppm	.50ppm	.75ppm	1.0ppm
1260	.05ppm	.10ppm	.25ppm	.50ppm	.75ppm	1.0ppm
DCB	.05ppm	.10ppm	.25ppm	.50ppm	.75ppm	1.0ppm
TCMX	.05ppm	.10ppm	.25ppm	.50ppm	.75ppm	1.0ppm

For RV analysis:

Compound	Std1 µg/mL	Std2 µg/mL	Std3* µg/mL	Std4 µg/mL	Std5 µg/mL	Std6 µg/mL
Amount of Intermediate added (uL)	40uL	80uL	100uL	200uL	400uL	1000uL
Final Volume (mL)	1mL	1mL	1mL	1mL	1mL	1mL
<b>Analyte Concentrations</b>						
1016	2ppb	4ppb	5ppb	10ppb	20ppb	50ppb
1260	2ppb	4ppb	5ppb	10ppb	20ppb	50ppb
DCB	2ppb	4ppb	5ppb	10ppb	20ppb	50ppb
TCMX	2ppb	4ppb	5ppb	10ppb	20ppb	50ppb

- Levels also used for ICV/CCV.

**NOTE:** A standard containing a mixture of Aroclor 1016 and Aroclor 1260 includes many of the peaks represented in the other five Aroclor mixtures. As a result, a multi-point initial calibration employing a mixture of Aroclors 1016 and 1260 at five concentrations is sufficient to demonstrate the linearity of the detector response without the necessity of performing initial calibrations for each of the nine Aroclors, but six points are routinely run for calibration. In addition, the 1016/1260 mixture is used as a standard to demonstrate that a sample does not contain peaks that represent any one of the Aroclors. This standard is used to determine the concentrations of either Aroclor 1016 or Aroclor 1260, if they are present in a sample. A 0.50ppm, or 5ppb for RV, single point calibration is used for all remaining Aroclors other than 1016/1260. These are analyzed following each new initial calibration curve.

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7.3.1 PCB presence and ID: Where PCBs are suspected and do not match the 1016/1260 standards, select the Aroclor that is suspected and run a single calibration point using the calibration standards listed in section 7.3.

7.4 Laboratory Control Sample, Matrix Spike Solution and Second Source Calibration Verification Solution:

Method	Matrix	Supplier/ Concentration*	Dilution	Spike Conc.	Spike Volume
608/8082 PCBs	Water	NSI - 1.0mg/mL each Aroclor 1016 & 1260	Dilute 1.0mL standard to 200mL in Acetone	5µg/mL	100uL of Spike Solution to 1L DI water (LCS) or 1L of sample (MS) or 10uL to 100mL for 3510RV
8082 PCBs	Soil/ Solid	NSI - 1.0mg/mL each Aroclor 1016 & 1260	Dilute 1.0mL standard to 200mL in Acetone	5µg/mL	1.0mL of Spike Solution to 30g Ottawa sand (LCS) or 30g of sample (MS) also Waste Dil.

\* see section 13.2

7.5 Hexane - pesticide grade - VWR EM-HX0298-1 or equivalent

7.6 Concentrated sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) - VWR VW6840-3 reagent grade or equivalent.

7.7 Stock Internal Standard: 1-Bromo-2-nitrobenzene at 5000 mg/L (Ultra Cat# PPS-351) or equivalent. Dilute the purchased stock standard 0.10mL, or 2uL for RV, to 10mL for the intermediate standard. Add 10uL of the intermediate standard to each 1mL standard, field sample, method blank, and QC (LCS/LCSD/MS/MSD) extract.

## 8.0 PROCEDURE

**STATE NOTE:** For samples analyzed in conjunction with the Ohio VAP program, the criteria found and itemized in this procedure for EPA method 8082 must be utilized.

8.1 Sample extraction

8.1.1 In general, water samples are extracted at a neutral pH with methylene chloride using a separatory funnel (ESC SOP# 330702 or 330702B). Solid samples are extracted with methylene chloride by ultrasonic extraction (ESC SOP# 330705) or by microwave (ESC SOP# 330707). Oil samples are extracted according to EPA method 3580A (ESC SOP# 330754).

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- 8.1.2 Reference materials, field-contaminated samples, or spiked samples are used to verify the applicability of the selected extraction technique to each new sample type. Such samples are spiked with the compounds of interest in order to determine the percent recovery and the limit of detection for that sample type. When other materials are not available and spiked samples are used, they are spiked with the analytes (Aroclors) of interest. When the presence of specific Aroclors is not anticipated, the Aroclor 1016/1260 mixture is an appropriate choice for spiking.
- 8.2 Extract cleanup: For information on specific cleanup procedures, see SOP No. 330741, *Sulfur Cleanup*, SOP No. 330740, *Acid Cleanup*, SOP No. 330742, *Florisil Cleanup*, and SOP No. 330739, *Silica Gel Cleanup*.
- 8.3 GC conditions. This method allows the analyst to choose between a single-column and a dual-column configuration in the injector port. Either wide- or narrow-bore columns may be used.
  - 8.3.1 GC temperature programs and flow rates – Current conditions can be found in the run log for the GC instrument.
  - 8.3.2 Helium is used as the carrier gas. The injector temperature is set at 220°C and the detector is at 350°C.
- 8.4 Initial Calibration: Prepare and inject, minimally, a 5-point calibration standard curve for 8082A or a 3-point calibration curve for EPA Method 608 (PCBs) and SM 6431B. The lowest level of the calibration curve must be at or below the RL. The lowest standard also serves as the reporting limit verification (RLV) standard and must be analyzed or reprocessed following each new calibration curve and must be verified with every 20 samples or at least every 12 hours when analysis occurs, to meet regulatory requirements. The RLV must be processed using the same calibration curve as is being utilized for client samples and must meet the requirements found in section 10.13. The same GC operating conditions used for the initial calibration must also be used for field sample analyses and QC samples.

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8.4.1 When PCBs are quantitatively determined as Aroclors, the initial calibration consists of two parts.

8.4.1.1 A standard containing a mixture of Aroclor 1016 and 1260 includes many of the peaks represented in the other five Aroclor mixtures. Thus, such a standard is used to demonstrate the linearity of the detector. In addition, such a mixture is used to demonstrate that a sample does not contain peaks that are represented in any one of the Aroclors. This standard is also used to determine the concentrations of either Aroclor 1016 or 1260 are present in a sample. Therefore, an initial five-point calibration is performed using the mixture of Aroclors 1016 and 1260 and the response (RF) or calibration factor (CF) for each concentration level is calculated. See section 9.0 for calculations.

8.4.1.2 **Dual Column Confirmation:** Calibration criteria must be met on both columns for positive confirmation of target analytes.

8.4.1.3 Standards of the other five Aroclors are necessary for pattern recognition. These standards are also used to determine a single-point calibration factor for each Aroclor, assuming that the Aroclor 1016/1260 mixture has been used to describe the detector response. The standards for these seven Aroclors must be analyzed prior to the analysis of any samples and can be analyzed before or after the analysis of the 1016/1260 calibration standards.

8.4.1.4 Where only a few Aroclors are of interest for a specific project, the analyst can employ a 5-point initial calibration for Method 8082A (3 points for Method 608) of each of the Aroclors of interest and not use the 1016/1260 mixture or the pattern recognition standards.

**STATE NOTE:** For Arizona compliance samples, a full calibration curve for Aroclor 1016/1260 is analyzed while all other multi-peak components, including all other Aroclors, toxaphene, and chlordane, are injected at the reporting limit. If any of these compounds are detected in the sample, a five-point calibration of the detected Aroclor is performed with the lowest standard at or below the RL. The samples require dilution if high concentrations of these compounds are present. The area of 5 selected peaks is compared to the same peaks in the sample for the determination of concentration.

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- 8.4.2 **Working Calibration Curve:** Inject the calibration standards to generate a working curve. HP Chemstation calculates the calibration factor or response factor for each compound in each standard according to the equations found in section 9.0. When the Aroclor 1016/1260 mixture is used to demonstrate the detector response, the calibration model chosen for this mixture must be applied to the other five Aroclors for which only single standards (and calibration factors) are analyzed. If multi-point calibration is performed for individual Aroclors, use the calibration factors determined from those standards to evaluate linearity.
- 8.4.3 Initial Calibration Verification (ICV)/Continuing Calibration Verification (CCV): On days that the instrument does not require full calibration, the initial calibration of the analytical system must be verified at least once for every 12 hour shift and on-going throughout the analytical sequence. A calibration standard is injected initially (ICV), then after every 20 samples and at the conclusion of the analytical sequence (CCV). For calibration verification, the mixture of 1016/1260 is used, unless one of the other 5 Aroclors is the target of interest and the calibration curve has been performed using that Aroclor. The calibration verification process does not require analysis of the other Aroclors that are used for pattern recognition.
- 8.4.3.1 The linear calibration or response factors for the (ICV/CCV) is determined using the calculations found in section 9.0 and then the percent difference or drift from the initial calibration curve is determined using the calculations in section 9.0.
- 8.4.3.2 The ICV/CCV is routinely at the mid-level concentration of the calibration standard; however other concentrations may be used to better meet client or regulatory requirements.
- 8.4.4 Second Source Calibration Verification (SSCV): The initial calibration curve generated must be verified using a source that is different from the stock solutions used to prepare the calibration curve. This source can be a separate manufacturer or separate lot number from the same manufacturer, if available. Routinely, the second source verification is performed at the mid-range of the calibration curve, but the concentration may be altered to better reflect client/project needs. The calibration factor for the SSCV is calculated using the equation found in section 9.0 and the difference from the initial calibration curve is determined using the equation also found in that section.

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- 8.5 Confirmations and Qualitative Identification. The identification of PCBs as Aroclors is based on agreement between the retention times of peaks in the sample chromatogram with the retention time windows established through the analysis of standards of the target analytes. Analyst judgment and experience also weigh heavily in the positive identification of potential Aroclors. Tentative identification of an analyte occurs when a peak from a sample extract falls within the established retention time window for a specific target analyte. Each tentative identification must be confirmed using a second GC column of dissimilar stationary phase (as in the dual-column analysis), based on a clearly identifiable Aroclor pattern, or using another technique such as GC/MS.
- 8.5.1 The results of a single column/single injection analysis **MUST** be confirmed on a second, dissimilar GC column. In order to be used for confirmation, retention time windows must be established for the second GC column.
- 8.5.2 Known Contaminants - When samples are analyzed from a source known to contain specific Aroclors, the results from a single-column analysis are confirmed on the basis of a clearly recognizable Aroclor pattern. This approach cannot be used for samples from unknown or unfamiliar sources or for samples that appear to contain mixtures of Aroclors. In order to employ this approach, the analyst must document:
- The peaks that were evaluated when comparing the sample chromatogram and the Aroclor standard.
  - The absence of major peaks representing any other Aroclor.
  - The source-specific information indicating that Aroclors are anticipated in the sample (e.g., historical data, client knowledge, etc.).
- 8.5.3 Quantitation of PCBs as Aroclors. The quantitation of PCB as Aroclors is accomplished by comparison of the peak pattern in the sample chromatogram to that of the most similar peak pattern from the Aroclor standard(s). A choice must be made as to which Aroclor pattern is most similar to that of the extract and whether the pattern in the standard is truly representative of the PCBs in the sample.
- STATE NOTE:** Once the correct Aroclor has been identified for Arizona compliance samples, a full calibration curve is prepared and analyzed followed by the samples of interest along with the appropriate QC samples.
- STATE NOTE:** Arizona compliance samples require that one Aroclor (1016/1260) has a full calibration curve and all other multi-peak components, ie. Aroclors, toxaphene, and chlordane must be injected at the laboratory reporting limit.

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8.5.3.1 Use the chromatograms from the individual Aroclor standards (not the 1016/1260 mixtures) to determine the pattern of peaks for Aroclors 1221, 1232, 1242, 1248, and 1254 (1262 & 1268 by request). The patterns for Aroclors 1016 and 1260 are evident from the mixed calibration standards; however, an individual 1016 standard may be injected to help determine slight differences between 1016 and 1242.

8.5.3.1.1 Once the pattern of the Aroclor present in the field samples has been identified, compare the responses of the 3-5 major peaks in the single-point calibration standard for the appropriate Aroclor with the peaks observed in the sample extract. The amount of Aroclor is calculated using the individual calibration factor for each of the characteristic peaks chosen and the calibration model (linear or non-linear) established from the multi-point calibration of the 1016/1260 mixture. A final analyte concentration is determined by calculating a concentration from each of the characteristic peaks and averaging those concentrations to determine the reportable concentration of that Aroclor in each field sample.

8.5.4 Three to five peaks are used for Aroclor identification and quantitation. Five peaks are preferred; however as few as three can be used where there is obvious interference. The peaks must be characteristic of the Aroclor in question. Choose peaks in the Aroclor standards that are at least 25% of the height of the largest Aroclor peak. For each Aroclor, the set of 3 to 5 peaks must include at least one peak that is unique to that Aroclor. Use 5 peaks for the Aroclor 1016/1260 mixture, none of which are found in both of these Aroclors.

8.5.5 When determining PCBs as Aroclors by the internal or external standard technique, calculate the response factor (RF) or calibration factor (CF) for each characteristic Aroclor peak in each of the initial calibration standards. Five sets of response/calibration factors will be generated for the Aroclor 1016/1260 mixture, each set consisting of the response/calibration factors for each of the peaks chosen for this mixture. The single standard for each of the other Aroclors will generate 5 response/calibration factors, one for each selected peak. See section 9.0 for the equations to calculate the response or calibration factors for the calibration curve and for the calculation of the concentration of Aroclors in field samples.

8.5.5.1 Peak height measurements are recommended over peak area only when overlapping peaks can cause errors in area integration.

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8.5.5.2 If the peak response is less than 2.5 times the baseline noise level, the validity of the quantitative result may be questionable. The analyst can consult with the source of the sample to determine whether further concentration of the sample is warranted.

8.5.5.3 If compound identification or quantitation is precluded due to interference (e.g., broad, rounded peaks or ill-defined baselines are present) cleanup of the extract or replacement of the capillary column or detector is warranted. Re-analyze the sample on another instrument to determine if the problem results from analytical hardware or the sample matrix. Refer to the ESC procedures to be followed if extract cleanup is required.

8.6 Weathering of PCBs in the environment and changes resulting from waste treatment processes may alter the PCBs to the point that the pattern of a specific Aroclor is no longer recognizable. Samples containing more than one Aroclor present similar problems. If results in terms of Aroclors are required, then the quantitation as Aroclors can be performed by measuring the total area of the PCB pattern and quantitating on the basis of the Aroclor standard that is most similar to the sample. Any peaks that are not identifiable as PCBs on the basis of retention times are subtracted from the total area. When quantitation is performed in this manner, the problems are fully described for the data user and the specific procedures employed by the analyst are thoroughly documented.

8.7 Acceptance criteria for all calibration standards and QC (Method Blank/internal standards/LCS/LCSD/MS/MSD) are contained in section 10.0. Corrective actions for outliers are contained in section 11.0.

## 9.0 DATA ANALYSIS AND CALCULATIONS

### 9.1 External Calibration Equations:

- The calibration factor for each standard can be calculated:

$$CF = \frac{A_s}{C_s}$$

where:  $A_s$  - Average Peak Area over the number of peaks used for quantitation  
 $C_s$  - Concentration of the analyte in the standard.

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- The average (or mean) calibration factor ( $\overline{CF}$ ) is calculated:

$$\overline{CF} = \frac{\sum_{i=1}^n CF_i}{n}$$

where:  $CF_i$  – Calibration Factor for each level of the calibration curve  
 $n$  – number of standards analyzed in the calibration curve

- The standard deviation (SD) of the calibration is determined:

$$SD = \sqrt{\frac{\sum_{i=1}^n (CF_i - \overline{CF})^2}{n-1}}$$

where:  $\overline{CF}$  – Average Calibration Factor for the calibration curve  
 $CF_i$  – Calibration Factor for each level of the calibration curve  
 $n$  – number of standards analyzed in the calibration curve

- The Percent Relative Standard Deviation for each analyte in the curve is determined:

$$RSD = \frac{SD}{\overline{CF}} \times 100$$

where:  $\overline{SD}$  – Standard Deviation for each analyte  
 $\overline{CF}$  – Average calibration factor for the specific analyte

## 9.2 Percent Difference for daily calibration curve verification:

$$\% \text{ Difference} = \frac{\overline{CF} - CF_v}{\overline{CF}} \times 100$$

where:  $CF_v$  – Calibration Factor from the calibration verification standard  
 $\overline{CF}$  – Average (or mean) calibration factor from the initial calibration curve

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### 9.3 Internal Calibration Equations:

$$RF = \frac{[A_s][C_{is}]}{[A_{is}][C_s]}$$

where:

- $A_s$  = Peak area (or height) of the analyte or surrogate.  
 $A_{is}$  = Peak area (or height) of the internal standard.  
 $C_s$  = Concentration of the analyte or surrogate, in  $\mu\text{g/L}$ .  
 $C_{is}$  = Concentration of the internal standard, in  $\mu\text{g/L}$ .

- Percent Relative Standard Deviation (%RSD)

$$\overline{RF} = \frac{\sum_{i=1}^n RF_i}{n} \quad SD = \sqrt{\frac{\sum_{i=1}^n (RF_i - \overline{RF})^2}{n-1}} \quad RSD = \frac{SD}{\overline{RF}} \times 100\%$$

where:

- $\overline{RSD}$  = Relative standard deviation.  
 $\overline{RF}$  = Mean of 5 initial RFs for a compound.  
 $SD$  = Standard deviation of average RFs for a compound.

- Percent Difference

$$\frac{RF_v - \overline{RF}}{\overline{RF}} \times 100\%$$

where:

- $\overline{RF}$  = Average response factor from initial calibration.  
 $RF_v$  = Response factor from current verification check standard.

### 9.4 Percent Drift

$$\% \text{Difference} = \frac{C_0 - C_1}{C_1} \times 100$$

where:

- $C_1$  = compound standard concentration  
 $C_0$  = measured concentration using selected quantitation method

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9.5 Linear calibration model:

$$y = mx + b$$

where:  $y$  = Response  $A_x$  for External Standard  
 $x$  = Concentration  $C_x$  for External Standard  
 $m$  = Slope  
 $b$  = Intercept

- Slope ( $m$ ):

$$m = \frac{[(S w x_i y_i) - (S w x_i) (S w y_i)]}{[(S w * S w x_i^2) - (S w x_i * S w x_i)]}$$

- Intercept ( $b$ ):

$$b = y_{AVE} - (m * (x_{AVE}))$$

- Correlation Coefficient ( $r$ ):

$$r = \frac{[(S w * S w x_i y_i) - (S w x_i) (S w y_i)]}{\sqrt{[(S w * S w x_i^2) - (S w x_i * S w x_i)] * [(S w * S w y_i^2) - (S w y_i * S w y_i)]}}$$

- Coefficient of Determination ( $r^2$ ):

$$r^2 = r * r$$

Where:  $n$  = number of  $x$ ,  $y$  pairs

$x_i$  = individual values for the independent variable

$y_i$  = individual values for the dependent variable

$w$  = weighting factor, for equal or no weighting  $w = 1$

$x_{AVE}$  = average of the  $x$  values

$y_{AVE}$  = average of the  $y$  values

$S$  = the sum of all the individual values

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- 9.6 The concentration of target compounds detected are quantitated using response or calibration factors as follows:

9.6.1 Aqueous samples:

$$\text{water mg/L} = \frac{\text{Area of Analyte}}{\text{Average CF or RF}} \times \frac{\text{mL of extract}}{\text{mL of sample}} \times \text{Dilution Factor}$$

9.6.2 Non-aqueous samples:

$$\text{soil mg/kg} = \frac{\text{Area of Analyte}}{\text{Average CF or RF}} \times \frac{\text{mL of extract}}{\text{grams of sample}} \times \text{Dilution Factor}$$

If no dilution is made then dilution factor = 1

- 9.7 The concentration of target compounds detected are quantitated using linear regression as follows:

9.7.1 External Standard Equation:

$$C_x = \{A_x - b\} / m$$

9.7.2 Internal Standard Equation

$$C_x = \{[(A_x)/(A_{is})] - b\} / m \times C_{is}$$

- 9.8 LCS/ICV/CCV Percent Recovery (%R):

$$\% R = \frac{\text{Measured concentration}}{\text{Actual concentration}} \times 100$$

- 9.9 Matrix Spike Recoveries (%R<sub>MS/MSD</sub>):

$$\%R_{MS/MSD} = \frac{O_i - O_s}{T_i} \times 100$$

where: O<sub>i</sub> = observed sample concentration with the spike added

O<sub>s</sub> = the observed value for the sample without the spike

T<sub>i</sub> = True value of the spike added

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9.10 Relative Percent Difference (%RPD):

$$RPD = \frac{Value\ 1 - Value\ 2}{\left( \frac{Value\ 1 + Value\ 2}{2} \right)} \times 100$$

10.0 QUALITY CONTROL AND METHOD PERFORMANCE

10.1 All analysts must meet the qualifications specified in SOP 030205, *Technical Training and Personnel Qualifications* before approval to perform this method. Analysts must complete an initial demonstration of proficiency before being approved to perform this method. Continuing proficiency must be demonstrated using proficiency testing, laboratory control sample analysis and/or MDL studies. Method performance is assessed per analyst. Updated method performance records are filed and stored in a central location within the department.

10.2 Use the designated Run log to record batch order and standards/reagents used during analysis. See SOP 030201, *Data Handling and Reporting*.

10.3 Batches:

Batches are defined as sets of 1 - 20 samples. Batch analysis must include the following: 1 method blank, 1 Initial Calibration Verification (ICV), 1 Laboratory Control Sample/Laboratory Control Sample Duplicate pair (LCS/LCSD), 1 Matrix Spike/Spike Duplicate (MS/MSD) pair, 1 Continuing Calibration Verification (CCV) every 10 samples and at the conclusion of the sequence. Exceptions are made for waste dilution samples where the minimum batch QC must include a method blank, an LCS/LCSD pair, 1 Continuing Calibration Verification (CCV) every 10 samples, 1 CCV at the conclusion of the sequence. All batch information must be maintained in the preparation documentation assigned to the department.

10.4 Initial Calibration – If the percent relative standard deviation (% RSD) of the calibration factors for each analyte is <15% for EPA 8082 and 8082A and <10% for EPA method 608, the average calibration factor can be used for quantitation. If the %RSD exceeds the method defined acceptance criteria, a calibration curve using linear regression can be employed. The linear regression calibration curve must have a correlation factor of 0.990 (USACE requires 0.995) or greater. The origin may not be used as a point in the calibration curve and the curve must not be forced through zero. The method blank is also not included as a point in the calibration curve for this method.

10.5 Method Blank – A method blank must be extracted and analyzed with each set of samples. The method blank must be carried through the same procedure as the samples and must not contain target analytes above ½ RL.

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- 10.6 Initial Calibration Verification (ICV)/Continuing Calibration Verification (CCV) – On days when a full calibration is not needed, an ICV must be analyzed prior to the analysis of any QC or field samples. Additionally, when using external calibration, a CCV must be analyzed following every 20 sample extracts and at the end of the analytical sequence. When internal calibration is utilized, a ICV must be analyzed initially for every 12 hour shift then the CCV is analyzed following every 20 sample extracts.
- The concentrations of the CCVs analyzed are routinely varied (at least once a quarter) to verify the entire calibration range.
  - The CF/RF must be within 15% of the initial calibration.
- 10.6.1 For Aroclor analyses, the routine CCV standard is a mixture of Aroclor 1016 and Aroclor 1260. The calibration verification process does not *require* analysis of the other Aroclor standards used for pattern recognition; however, if one of the other Aroclors is the analyte of interest and the component used for the initial calibration, the CCV will be a mid-level standard of the Aroclor of interest.
- 10.7 Second Source Calibration Verification (SSCV) – A second source calibration verification standard (SSCV) is analyzed after each calibration and must meet criteria of  $\pm 20\%$  of the expected concentration for each analyte.
- 10.8 Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD) – must be extracted with each batch of samples.
- The LCS/LCSD must be within the acceptance criteria listed in Section 10.8.1. Section 10.8.1 represents QC acceptance criteria calculated from historical ESC values for the method. The acceptance criteria are more stringent than those of methods 608.

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10.8.1 QC Acceptance Criteria – subject to change per laboratory policy.

Water Quality Control Acceptance Criteria *effective 7/1/11:*

	LCS/LCSD Acceptance Criteria			ME Acceptance Criteria	
Compound Name	Control Limits		RPD Limit	Control Limits	
	Lower	Upper		Lower	Upper
PCB 1016	32	126	22	20	142
PCB 1260	58	128	20	46	140

Compound Name	MS/MSD Acceptance Criteria		
	Control Limits		RPD Limit
	Lower	Upper	
PCB 1016	70	130	20
PCB 1260	10	133	34

Surrogate		
	Lower Limit	Upper Limit
Tetrachloro-M-Xylene	10	125
Decachlorobiphenyl	10	141

Soil Quality Control Acceptance Criteria *effective 7/1/11:*

	LCS/LCSD Acceptance Criteria			ME Acceptance Criteria	
Compound Name	Control Limits		RPD Limit	Control Limits	
	Lower	Upper		Lower	Upper
PCB 1016	64	120	20	55	129
PCB 1260	72	130	20	62	140

Compound Name	MS/MSD Acceptance Criteria		
	Control Limits		RPD Limit
	Lower	Upper	
PCB 1016	10	165	33
PCB 1260	29	154	23

Surrogate		
	Lower Limit	Upper Limit
Tetrachloro-M-Xylene	35	130
Decachlorobiphenyl	21	147

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**STATE NOTE:** For all samples analyzed from South Carolina, the LCS/LCSD recovery must be within 70-130% for both soil and water matrices with an RPD of <20%.

**STATE NOTE:** For South Carolina and Ohio VAP samples, marginal exceedences do not apply. All outliers in QC require corrective action when possible and the data must be flagged when necessary.

- 10.9 Matrix Spike (MS)/Matrix Spike Duplicate (MSD) – must be analyzed with each batch of samples.
- Method 608 states that matrix spikes must be done at a rate of 10%.
  - The spike and spike duplicate must meet the criteria listed in Section 10.8.1. Section 10.8.1 represents QC acceptance criteria calculated from historical ESC values for the method.
- 10.10 Confirmation - Any sample that shows a detectable concentration of any compound above the method detection limit must be confirmed on a second column or by GC/MS, except as noted in section 8.5.2. The result from the primary column and the confirmation column must agree within 40% RPD and acceptable calibration criteria must be met on both columns.
- 10.11 Surrogate – Calculate the surrogate recovery on all samples, method blanks, and spikes. Determine if the recovery is within the QC Acceptance criteria in section 10.8.1.
- 10.12 Internal Standards (internal calibration model) - The internal standard area counts must be monitored for all CCVs. ISTDs must recover within 50% to 200% of the area counts from the internal standard area counts of the midpoint standard of the most recent initial calibration sequence.

The internal standard responses and retention times in the check calibration standard must be evaluated immediately after or during data acquisition. If the retention time for any internal standard changes by more than 30 seconds from the last calibration verification, the chromatographic system must be inspected for malfunctions and corrections must be made, as required.

Internal standards must be monitored for each sample. ISTDs in samples must meet the -50% to +200% criteria when compared to the ISTDs in the daily CCV or mid-level of the calibration curve, on 12h shifts when full calibration is performed.

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- 10.13 RLV – The reporting limit verification when analyzed must recover within  $\pm 50\%$  of the target concentration for the standard.

**STATE NOTE:** For all samples analyzed from Minnesota, the reporting limit must be verified at least monthly, with each new initial calibration, or when there has been significant change to the instrument (column replacement, cleaning source, etc.) whichever is more frequent. The reporting limit verification can be performed by either re-injecting the low standard or by re-processing the low standard that was analyzed in the calibration curve. The reporting limit verification (RLV) must recovery within  $\pm 40\%$  of the expected concentration. If this criteria is not met, the RLV may be re-analyzed once, instrument maintenance can be performed, a higher concentration standard can be injected, or a new calibration curve must be generated. If a higher concentration standard is utilized, the reporting limit must be raised to the higher level verified.

- 10.14 Any sample analyte responses that are beyond the linear range of the calibration curve must be diluted and re-analyzed.

**STATE NOTE:** For samples analyzed in conjunction with compliance work for Ohio VAP, MN, NY, and AZ, estimated values are not permitted.

- 10.15 Manual Integration – All manual integrations must comply with the requirements found in ESC SOP# 030215, *Manual Integration Procedure*. Before and after integrations must be available for review by the secondary data reviewer.

- 10.16 For corrective actions, see section 11.0.

## 11.0 DATA VALIDATION AND CORRECTIVE ACTION

- 11.1 All data must undergo a primary review by the analyst. The analyst must check the performance of the initial calibration, mid-point check standard, and continuing calibrations to ensure that they meet the criteria of the method. The analyst must review any sample that has quantifiable compounds and make sure that they have been confirmed. The analyst must also verify that reported results are derived from quantitation between the RL and the highest standard of the initial calibration curve. All calculations must be checked (any dilutions, %solids, etc.). Data must be checked for the presence or absence of appropriate flags. Comments must be noted when data is flagged.

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- 11.2 All data must undergo a second analyst review. The analyst checking the data must check the performance of the initial calibration, mid-point check standard, and continuing calibrations to ensure that they meet the criteria of the method.
  - 11.2.1 The analyst must review any sample that has quantifiable compounds and make sure that they have been confirmed.
  - 11.2.2 All calculations must be checked.
  - 11.2.3 All surrogate recoveries must be checked to ensure that they are within QC acceptance criteria or that corrective action has occurred.
  - 11.2.4 Method blanks must be free of all interfering peaks.
  - 11.2.5 Quality control criteria must be checked for the LCS, LCSD, MS, and MSD.
  - 11.2.6 Data must be checked to determine the need for appropriate flags. Comments are noted when results are flagged.
  - 11.2.7 The reviewer must verify all reported results are derived from analytical results that are above the reporting limit and below the highest standard of the initial calibration curve.
  - 11.2.8 Reported sample hits must include an overlay of the identified analyte with the sample for the second analyst review.
  - 11.2.9 All manual integrations must be verified through checking the before/after shot of the sample and/or QC.
  - 11.2.10 All multipliers/dilutions must be verified on the quant report and must agree with the information provided on the injection log.
  - 11.2.11 Retention times of the samples must be compared to that of the calibration standard.
  - 11.2.12 Verify any linear regression by reviewing the calibration curve printout.
  - 11.2.13 See SOP #030201, *Data Handling and Reporting*.
- 11.3 Initial Calibration – Corrective actions for failures in the initial calibration curve include: instrument maintenance and re-preparing the calibration standards.

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- 11.4 SSCV – If the acceptance criteria is not met, a new calibration curve or new SSCV must be prepared and analyzed, depending on the source of the discrepancy. An SSCV must pass the acceptance criteria prior to the analysis of field samples.
- 11.5 ICV/CCV – When the initial or continuing calibration verification is out of the acceptance criteria, the analysis must stop and corrective action must be taken to determine the cause of the problem. Corrective actions include: re-analysis of the ICV/CCV once. If the failure persists, additional corrective actions include: instrument maintenance, re-preparing the calibration standard, re-calibration of the instrument. When using external calibration, samples analyzed between the last passing calibration standard and the calibration standard that is out of control must be re-analyzed.
- 11.6 Method Blank – If the method blank shows any detectable amount greater than  $\frac{1}{2}$  the RL, the laboratory performance is assumed to be out of control and the problem must be corrected. Corrective actions include: re-analysis once. If the failure persists, re-extract the entire batch of samples, if submitted sample volume permits, or, if acceptable to the client, the data may be flagged with a B.
- STATE NOTE:** For samples analyzed in conjunction with Ohio VAP, when target analyte concentrations are above the reporting limit, if sufficient sample volume was submitted by the client and the holding time can be met, samples must be re-extracted and re-analyzed prior to flagging the data report.
- 11.7 MS/MSD – If the spike and spike duplicate do not meet the criteria listed in section 10.8.1, or current ESC quality control acceptance criteria, the sample must be flagged as possible matrix interference.
- 11.7.1 Spike failure that result in the use of a "J" flag followed by the appropriate number, which further explains the failure concerning high or low bias
- 11.8 LCS/LCSD – If the LCS/LCSD does not perform within the ranges listed in Attachment II, or current ESC quality control acceptance criteria, the laboratory performance is assumed to be out of control and the problem must be corrected. Corrective action can include re-analysis, if instrument malfunction is suspected, or re-preparation and re-analysis of the entire batch, if the failure is suspected as either extraction or sample related.

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- 11.9 Confirmation - If the relative percent difference of the results exceeds 40% and one result is significantly higher (e.g., >40%), check the chromatograms to see if an obviously overlapping peak is causing an erroneously high result. If no overlapping peaks are noted, examine the baseline parameters established by the instrument data system (or operator) during peak integration. If re-integration is necessary, ESC manual integration procedures must be followed and documented by printing a before and after shot of the chromatograms. When confirmation is not within the 40% criteria, unless otherwise specified in an approved project plan, the higher result is reported, as this is a conservative approach relative to protection of the environment
- 11.10 Surrogates - If the recovery is not within the quality control acceptance criteria stated in section 10.8.1, confirm that there are no errors in the calculations, surrogate solutions and standards. Check the instrument performance. Examine the chromatograms for interfering peaks and integrated areas. Re-calculate the data and/or re-analyze the extract if any of the above checks reveal a problem. Re-extract and re-analyze the sample if none of the above are determined to be the problem.
- 11.10.1 If a field sample exhibits poor surrogate recovery due to obvious matrix interferents, then qualify the sample with "J1" high or "J2" low to show that the surrogate quality control acceptance criteria were not met. Samples with unacceptable recoveries are re-extracted if there is sufficient field sample volume remaining.
- 11.10.2 If low surrogate recoveries are found throughout the analytical batch, including the QC samples, then the run must be re-extracted and re-analyzed, if sufficient volume was submitted by the client.
- 11.11 Internal Standards - If any internal standard response is beyond the acceptable recovery in the ICV/CCV, corrective action is required. Corrective action can take the form of checking the original calculations to ensure accuracy, re-analysis of the CCV to verify initial results, instrument maintenance (i.e. column clipping or changing, inlet liner cleaning/replacement, etc.) or re-calibration.

If the retention time for any internal standard changes by more than 30 seconds from the last calibration verification, the chromatographic system must be inspected for malfunctions and corrections must be made, as required. When corrections are made, re-analysis of the CCV or a complete re-calibration is necessary, depending on the impact of the correction on the analytical system.

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Internal standards in the field samples must be monitored. If ISTD recovery does not meet the acceptance criteria, correction action is required. Possible corrective actions include: re-analysis, if instrument malfunction is suspected, or re-preparation and re-analysis, if the failure is suspected as either extraction or sample related. If the sample has an obvious matrix interferent and the internal standard recovery is greater than 200%, the sample can be diluted (if acceptable reporting limits can be achieved) to minimize the interference or the sample must be re-extracted and re-analyzed. If interference is not obviously the problem with the ISTD recovery, the sample must be re-analyzed undiluted to confirm the original failure.

- 11.12 RLV – If the RLV does not meet the acceptance criteria, the RLV may be re-analyzed once, instrument maintenance can be performed, a higher concentration standard can be injected, or a new calibration curve must be generated. If a higher concentration standard is utilized, the reporting limit for the field samples must be elevated to the higher level verified.
- 11.13 Instrument maintenance is performed routinely to optimize instrument performance and improve chromatography. Commonly performed maintenance include changing of the injection port liner and clipping the column at the injection port end to eliminate active sites. A new calibration curve must be analyzed following any major maintenance performed on the analytical system.
- 11.14 Data that does not meet acceptable QC criteria may be acceptable for use in certain circumstances.
- 11.14.1 If a method blank contains an amount of target analyte, but all samples are non-detected, the data may be reported with a “B3” flag. If a method blank contains an amount of target analyte, but the samples contain analyte at a level that is 10 times the level present in the method blanks, the data may be reported with a “B” flag.
- STATE NOTE:** The Ohio VAP program does not accept data released using the 10X criteria for method blank contamination as noted in section 11.14.1.
- 11.14.2 If the MS/MSD fails (recovery less than 30% or greater than 150% and/or RPD greater than 30%) in an initial analysis and again upon re-analysis, the data is released with an appropriate qualifier as the failure is accepted as matrix related.
- 11.14.3 If a calibration verification standard is above the acceptable QC criteria and all samples being bracketed are below the reporting limit, the data is acceptable based on a high calibration bias with undetectable levels in the field samples. Any positive samples require re-analysis.

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- 11.14.4 If the surrogate exhibits high recovery in the field samples and the target analytes in the field samples are below the reporting limit, the data may be released with a J1 qualifier indicating the high bias. If the QC samples (LCS, LCSD, MS, MSD) exhibit a high bias in the surrogate and the field samples are below the reporting limit for the target analyte, the data may be released with a J1 qualifier.
- 11.14.5 If the target analyte spiked in the quality control samples (LCS, LCSD, MS, MSD) exhibits high recovery and the target analytes in the field samples are below the reporting limit, the data may be released with a J4 qualifier indicating the high bias.
- 11.14.6 If the target analyte spiked into the QC pair (LCS/LCSD, MS/MSD) exhibit acceptable recoveries, but high calculated RPD values for precision, and the target analytes in the field sample are flagged with a J3 for the precision beyond acceptable quality control limits.
- 11.14.7 Sample results can be qualified and possible bias is narrated per the ESC SOP# 030201, *Data Handling*.

**STATE NOTE:** If the sample is analyzed in conjunction with the Ohio VAP, corrective action for failing QC (i.e. blank, surrogate, spike, ISTD, etc.) must be performed prior to flagging data, if sufficient sample volume was submitted by the client and the holding time can be met. Corrective action can include re-analysis, if instrument malfunction is suspected, or re-preparation and re-analysis, if the failure is suspected as either extraction or sample related.

**STATE NOTE:** For samples analyzed in conjunction with compliance work for Ohio VAP, MN, NY, AZ, or the state Laboratory of Tennessee, estimated values are not permitted.

## 12.0 POLLUTION PREVENTION AND WASTE MANAGEMENT

- 12.1 The EPA requires that laboratory waste management practice to be conducted consistent with all applicable federal and state laws and regulations. Excess reagents, samples and method process wastes must be characterized and disposed of in an acceptable manner. See *ESC Waste Management Plan*.
- 12.2 See SOP #030302, *Pollution Prevention*.

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### 13.0 METHOD MODIFICATIONS/CLARIFICATIONS

- 13.1 Modifications to this method are noted in the body of the text as state notes. Compliance analyses performed in conjunction with specific state requirements must be performed as noted within the specific state(s) listed.
- 13.2 Adjustments to the concentrations of standards/spiking solutions, standards providers, and quality control are subject to change to better meet client/project/regulatory needs or to improve laboratory method performance.
- 13.3 Additional Aroclors (i.e. Aroclor 1262 and 1268) are quantitated using this procedure than those specifically listed in EPA Method 8082 and/or 8082A. The laboratory maintains sufficient method validation in support of the analysis of these analytes; however, these Aroclors are not contained in the laboratory's Ohio VAP scope of accreditation and this procedure is not approved for use for sample analysis of Aroclor 1262 and/or 1268 in that regulatory program.
- 13.4 The reduced volume of field sample used in this procedure is performed in accordance with section 7.1 of the published EPA 3510C method. The reduction in volume extracted along with analysis of the resulting extract using large volume injection (up to 250uL can be injected with the LVI injection port) on each GC allows for low detection limits in line with those obtained using a 1L extraction and the 1-2uL injection. Complete method validation is performed for this process prior to utilizing the reduced volume extraction. This validation is maintained by the Regulatory Affairs Department and is regularly verified using LCS/LCSD, MDL studies and DOCs.

### 14.0 REFERENCES

- 14.1 *Test Methods for Evaluating Solid Waste*, SW846 3rd Edition, Method 8082.
- 14.2 *Test Methods for Evaluating Solid Waste*, SW846 3rd Edition (Update IV), Method 8082A.
- 14.3 "The Determination of Polychlorinated Biphenyls in Transformer Fluid and Waste Oils", EPA 600/4-81-045 Sept. 1982.
- 14.4 *Test Methods for Evaluating Solid Waste*, SW846 3rd Edition, Method 8000B.
- 14.5 *Test Methods for Evaluating Solid Waste*, SW846 3<sup>rd</sup> Edition, Method 8000C.
- 14.6 Standard Methods, 20th Edition, 6431B.
- 14.7 40CFR Part 136, Appendix A, EPA Method 608

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**Attachment I: Revision History**

**Current Version:**

Version	Date	Description of Revisions
9	4/24/12	Technical and Quality Review and update. Revised sections 7.3, 7.4, 7.7, 8.7, 10.8.1, and 11.5; Added sections 4.6 and 11.14.7. Ohio VAP approved 4/24/12.

**Superseded Versions:**

This document supersedes the following:

Version	Date	Description of Revisions
0	2/11/00	Origination
1	8/21/00	
2	10/16/01	
3	7/9/03	
4	12/17/04	
5	2/23/09	Technical and Quality Review and update. Included state notes, included criteria for dual column analysis, clarified ICV/CCV use and criteria, included correlation coefficient and linear regression calculations, revised sections 12.0 & 13.0.
6	3/25/11	Technical and Quality Review and update. Revised sections 1.1, 2.0, 4.3, 4.4, 6.1, 7.1, 7.3, 7.4, 7.7, 8.1, 8.3, 8.4, 8.5.3.1, 8.5.5, 9.0, 10.0, 11.0, and 12.1; Added state notes in sections 1.0, 4.5, and 13.2
7	9/21/11	Technical and Quality Review and update. Revised sections 2.2, 8.5.1, 9.6, 10.10, 11.10, 11.11, and 11.14; Added state notes in sections 1.0, 8.0, 11.6, and 11.14; Added sections 8.7, 9.7, 10.16, 11.14.4 through 11.14.6 and 13.3
8	2/17/12	Technical and Quality Review and update. Revised sections 2.1, 2.2, 6.1, 7.3, 7.7, 8.1.1, and 10.8.1; Added state notes in sections 1.0 and 10.8.1; Added sections 1.4.1, 2.29, 2.30, and 13.4.

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